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LECTURES
ON THE
PSYCHOLOGY
OF
THOUGHT AND ACTION,
COMPARATIVE AND HUMAN,

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PREFACE.

I have called this work, "*Lectures on Psychology*," for the two-fold purpose of forestalling the expectation of finding the fulness and proportions of a complete treatise—and of allowing myself a little more ease and latitude in the discussion of some of the points, than the proprieties of a regularly scientific presentation of facts and principles would allow.

The most conspicuous feature of the works hitherto published in Mental Philosophy—or on Metaphysical Subjects, under any name, is the frequency with which abstract terms are used. I presume that if we should examine the works professing to treat of Psychology or the Philosophy of Mind—we should find that nine-tenths at least, of all their discussions are occupied with either "ideas," or the "faculties" of the mind. But are "ideas" realities? Has the mind "faculties," as the body has organs and limbs for the performance of its functions? These are grave questions, and they

most assuredly are not to be assumed *without discussion* as true, and made the basis of a science of the mind and of intelligence.

I have, therefore, begun my work with a consideration of the Body, and what it, and parts of it, do in the phenomena of thought, feeling and volition. I have then proved that there is in man a Mind, distinct and different from the body, and then passed on to consider what it does—discussing incidentally, but not finally, the question of “ideas” and “faculties.” It will doubtless appear to many, that I have reduced the influence of will or mind too much, and make of it too small a factor, or force in producing the phenomena of life—in man’s control of himself, his actions, and the formation of his character.

But of course, I think that the views I have presented in these pages, are not justly liable to that objection. I have endeavored to follow facts, and the fair results or inferences from them; and I think that the views I have arrived at—without however intending it—are about mid-way between those who make of mind and will everything, and those, who, on the other hand, as mere materialists, have made it to be nothing—or only an abstraction—a mere “phase of Nature’s order.”

I hope that I have produced a book that will be of

practical utility and value. This in fact is what has been aimed at, and claimed for every work that has yet been offered to the public. But no work on Psychology, or Mental Philosophy, has ever been produced that sustains the same relation to human nature, and our dealings with man in all the relations of life, sick or well, sane or insane, in infancy or age, in manhood or womanhood,—that Chemistry, for example, sustains to the substances we meet with in the material world, and the processes that take place there—in growth and decay, in baking and brewing, in washing and churning, in tanning and dyeing, and the thousands of other processes by which such objects as exist in Nature around us, are changed and made useful as commodities, or removed as nuisances.

When we have a Psychology that deserves the name, and *is a science at all*, it will accomplish these beneficial results, for all who shall have possessed themselves of its facts and comprehended its principles.

If I have accomplished these things, or made any considerable approach towards their accomplishment, I think that this fact will be a sufficient apology for adding one more book to a department that is already full; and in which new works are being produced with great frequency—a frequency, which, whatever it may indi-

cate, as to the maturity of the Science, or as to its having as yet so much as reached a satisfactory beginning—shows beyond question, that the interest in it is not exhausted, and is not perhaps likely to be exhausted very soon.

This volume consists of the manuscript from which I have been accustomed to lecture for several years past, and though offered to the public, it is published chiefly for the use of the students attending my lectures. I hope to follow it up during the year, with one or two volumes more, which will explain more fully some of the principles assumed and the methods used in preparing the matter contained in the following pages.

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CORNELL UNIVERSITY, }
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PSYCHOLOGY.

LECTURE I.

THE NERVOUS SYSTEM.

1. Physiology and Psychology are so intimately connected that there is no possibility of understanding one without some knowledge of the other. To the eye of the observer, man is a physical being, an object of sight, like the others around him; and all the phenomena of life, as they are observed by the eye and ear, are physiological phenomena. And there are some philosophers who deny that there is anything more in human life than what properly belongs to the sphere of physiology. Such men are very properly called materialists.

2. But without going to that extent in the direction of materialism—an extent which I trust I shall be able to show, in the course of these Lectures, we are not authorized or justified in going—all writers are now agreed in the opinion that we know of no psychological phenomenon—no mental act—which is not accompanied by, and dependent upon, some change in, or active condition of, the nervous system, or some part of it. I shall therefore prepare the way for the discussions of the purely mental or psychological phenomena by a brief account of the nervous system, with special reference to that system as it exists in man.

3. Nerve tissue is of two kinds: *ganglionic* and *tubular* or *fibrous*. The *ganglionic* tissue is of a granular appearance, and is sometimes called, from its color, the grey or cineritious matter. It is distributed in masses called *ganglia*. The *tubular* tissue is fibrous in its appearance and is also called the white matter. The *ganglionic* matter constitutes the organs of sensation, thought, volition, &c.,—while the *fibrous*, or white matter, consists of small pipes or cords, which either connect these *ganglionic* masses one with another, or a *ganglionic* mass, with a muscle, gland, bone, blood-vessel, &c. In the latter case they are called simply nerves; but when they connect *ganglionic* masses they are called *commisures*.

4. The relation of these two parts, the *ganglionic* and *tubular*, is well illustrated by reference to the electric telegraph. The *ganglia* are the batteries, the *tubular* portion or nerves are the wires that connect the batteries with one another and with the machine that writes the message. Thus a volition, to raise the hand, for example, formed in the head by the brain, is conducted by the *tubular* nerves down the spinal column to the brachial plexus, between the shoulders, and then down the arm to the muscles, by the contraction of which the hand is raised.

I have been accustomed to use both terms, “*tubular*” and “*fibrous*,” for, really, the nerves have both appearances. They consist of an exterior filament, or *tubular* membrane, filled with a substance which is so very much like it in appearance that it is not easily distinguished from it, called, after its discoverer, “the white substance of Schwann;” and inside of this the “axis cylinder,” a narrow ribbon-shaped cord. Thus a nerve appears to be a tube filled with a white, soft, creamy substance with an

axis' cylinder inside, but to the eye it appears like minute fibres or filaments, running in a direction nearly parallel with each other, and making, when many of them are united into one cord, what are popularly known as "nerves."

5. The fibrous nerves are also of two kinds—(1) the sensory, or centripetal—(2) the motor, efferent, or centrifugal. The first class convey sensations from the periphery of the body inwards to the ganglionic centres; and the other convey emotions and volitions from these centres outwards to the muscles. These two kinds of nerve fibre are, for the most part, contained in the same sheath, *Neurilemma*, and really form what is commonly regarded as but one nerve. But the nerve, as we see it by the naked eye, consists of an immense number of these little nerve fibres which are not more than one thirty-thousandth of an inch in diameter, in many cases; and when the sensory fibres of one nerve are distributed to the skin, on the surface, the motor fibres of the same nerve are distributed either to the tissues that lie directly below where the sensory fibres constitute the organ of sense, or to the muscles concerned in moving that part of the body.

6. These two kinds of nerve fibre come off from the spinal column by two distinct roots—the sensory fibres behind the motor—and they join each other just as they emerge from the spinal column. But the fibres, although so small and so closely compacted, never blend or anastomose with each other. Like many electric wires, each isolated from the other though bound in a common cable, they preserve their distinctness from beginning to end; and a sensation or emotion may go along the whole length of one of them without affecting another. Hence it is that when even a pin pricks a single spot on

the finger, we can tell by the sense of feeling precisely where the pin enters the skin; one nerve fibre alone is affected and reports to the brain, so to express it, from its own special point of observation, without disturbing the rest or so much as allowing them to know what it is about.

7. These two kinds of nerve fibre are distinguished only by their function. They present to the eye, and even under the most powerful microscope, no apparent difference of construction. If, however, we sever the motor root of a nerve and try to irritate the two ends thus produced, we find that we can send a motion down the nerve to the muscles in which it terminates, and produce contraction, and so motion of the limb; but we can send nothing up in the other direction, and hence we can produce neither sensation nor pain.*

But if we sever the sensory root and make an effort to irritate the ends, we find results just the reverse—we can send no sensation or emotion down the nerve towards the extremity, but we can send a sensation up in the other direction, and thus produce pain.†

*MAGENDIE, however, showed that in the case of irritation of the distal end of the motor root, there was not only contraction of muscle, but pain as well. This he called “recurrent sensation,” and he thought it proved the existence of sensory fibres in the motor roots. But BROWN-SEQUARD has shown that the pain is the result of the violent contraction of the muscular fibres—like that in cramp, etc.—and is not produced at the place where the irritation is applied to the motor nerve.

†It has been shown by the experiments of M. BERT that the difference is not in the nerves but in the tissue to which they are attached or in the nature of their attachments. He grafted the end of a rat's tail into his body, near the roots of the tail, and after the adhesion had become complete, he cut off the tail near its root and thus left the tail of the animal swinging loose, “wrong end foremost”—

8. The nerves are distributed to every organ and tissue of the body except the hair, nails, etc., which have no feeling or motion. They come off from the nerve centres in large cords, and are subdivided like the branches of a tree, until they give motion to each muscle and sensibility to every point of the skin. And if by any means we could dissolve out of the human system, all the tissues except the nerves, we should have left a figure with the same form and contour as the body has at present (without the hair and nails)—of a pearly whiteness—of a gauze-like structure, with meshes so small, that it would appear as one continuous surface.

9. In another point of view, the nervous system is divided into three parts, each of which contains nerve-tissues of both the kinds above described, namely: (1) The brain, or what is contained in the cavity of the skull—the encephalon—(2) the spinal cord—what is contained in the canal made by the arches of the processes that come off from the vertebræ, and (3) the ganglionic, or sympathetic system, as it is called, which consists of two cords of small ganglia, connected by tubular matter, one on each side of the spinal column and within the cavities of the thorax and abdomen.

10. Of this last system—the sympathetic—I shall say but little, since its functions are obscure, and writers on anatomy and physiology are not at all well agreed as to what part it does perform in the animal economy. It sends off fibres to the spinal cord and to the nerves that come off from it, and thus would seem to connect the organs of the mere vegetative life, as circulation, assim-

sensation and the power of motion being the same, and, apparently, as good as before the reverse of the natural order.—*Vulpian La Physiologie du Systeme Nerveux.* p. 287

ilation, etc., with those of the animal life and even with those of the higher and more purely intellectual and moral nature of man.*

11. The spinal cord appears, at first sight, to be merely a cylindrical prolongation of the brain down into the spinal canal, and extends from the *foramen magnum*, down the spine, the whole length of the back. This cord, however, is nearly divided into two columns by two fissures—the one extending from behind forward and called the posterior fissure, and the other extending from before backward and called the anterior fissure. But the cord consists of the two kinds of nerve tissue already described, the cineritious, grey or ganglionic being in the centre, with the tubular matter surrounding it.

12. We shall be able to form an idea of the structure of the spinal cord sufficiently definite for our purpose if we suppose an interior ganglionic column surrounded by tubular nerves. The ganglionic column, somewhat in the shape of a letter X, or rather, perhaps, of two comma's, turned upside down and the convex sides (X) towards each other; the two upper points being the posterior horns, or *cornua*, and the two lower the anterior horns. The part of the tubular matter in front between the anterior horns, is called the anterior column, and is divided nearly in two in the middle, as just said, by a fissure extending lengthwise of the column and in-

*LAYCOCK; "*Mind and Brain*," has a theory on this subject which differs from the one that is commonly accepted, in a very material point. He holds that the sympathetic system is, really, that which we find in animals below the vertebrates, and is, in consequence, the organ of all purely vital functions; and he thinks that the cerebellum is, virtually, a great sympathetic centre, and thus sustains about the same relation to the sympathetic system as the cerebrum does to the cerebro-spinal system. § 903, 1010.

wards, nearly to the point where it meets the grey matter. The portion between the posterior horns is in like manner divided by the posterior fissure. The portions on the sides between the posterior and anterior horns are called respectively the lateral columns. These horns approach very nearly to the outer surface of the cord, and the sensory fibres come off from the posterior horns and constitute the posterior roots of the nerves, while the motor fibres, in like manner, come from the anterior horns.

The ganglionic matter consists, not of fibres, but of cells, which, in their simplest form, are nearly globular. But in most cases they have some tail-like projections, extending in opposite directions. What is the function or use of these projections, is a question not yet answered satisfactorily. Several of these cells, or granules, when they are brought together, constitute a ganglion. They always have, however, nerve fibres of the white or tubular matter, extending and diffusing themselves every where through the ganglionic mass—so that there is not probably, a single nerve cell or granule that is not in immediate contact with a nerve fibre; and these fibres, so soon as they emerge from the ganglionic masses or enlargements proceed—as white nerves—to other tissues—ganglia, muscles, etc.

13. That portion of the grey matter which is comprehended within the arch formed by the processes of any one of the vertebræ, may be considered as in some sense a separate ganglion or organ,* and a pair of nerves—one

*In some of the lower vertebrates, as the *cyclostomata*, the cord presents a constricted or bead-like appearance, something like the abdominal column in the articulates, thus proving the segmental character of the spinal axis. The same is the case with human infants in the earliest stages of utero-gestation.

on each side, (and by the double root already described,) come off from each of these ganglia—that is, one double-rooted pair for each of the vertebræ of the spinal column. And each of the ganglia, of which the spinal column is thus supposed to be composed, is to some extent a centre of life and sensation in itself. In the lower order of animals the body may be separated, and the animal cut into as many parts as there are ganglia, and each part will become a living animal, and grow into the perfect form of its kind; just as in plants, we may cut them into slips, and each bud may be made to grow into a new plant, as complete in its form and organization as the parent plant itself.

14. The brain or entire encephalon is usually divided into three parts: (1) Cerebrum, (2) Cerebellum, (3) Medulla Oblongata. But, in fact, and for our purposes, it had better be considered under a different subdivision. As the spinal cord ascends and enters the skull, it enlarges and expands. The parts of the posterior and anterior columns become separated, and *decussate*, that is, send fibres from one part across the fissures into the other; and two entirely new ganglionic bodies—the *corpora olivaria*, are inserted between the anterior columns, now called the *corpora pyramidalia*, or anterior pyramids, and the lateral columns now called *restiform*, bodies. This enlargement, or rather the enlarged portion of the spinal cord, is called the *Medulla Oblongata*. A little farther up there is a band of transverse fibres passing around, in front of the column, from side to side, called *Pons Varolii*, and the enlargement under it is called the *Tuber Annulare*.

15. The lateral columns turn backward, and after being joined by fibres from the posterior columns, they unite and enter the cerebellum, and in fact the cere-

bellum seems to be formed upon them. Whether these fibres pass through and out of the cerebellum up into the cerebrum proper, or whether they terminate and others originate in the cerebellum and pass up into the cerebrum, is a matter yet in dispute.

16. The anterior and the greater part of the posterior columns, on the other hand, incline forward in man, (downward in quadrupeds, birds, etc.,) from the time they enter the skull, and bend over gradually, until, in man, they make a full quarter of a circle, and proceed on to the forehead, so that at the base of the skull they extend in a line at right angles with the spinal cord. As they pass on, upward and forward, and after the lateral columns have left to go back into the cerebellum, there arises on their upper surface the *corpora quadrigemina*—which are really two bodies, side by side of each other, and each of them about the shape and size of a peanut shell (with two nuts in each shell) thus giving to them the appearance of four bodies—(hence their name). In these the optic nerve takes its rise.

17. Just above and forward of them the posterior columns appear, to terminate in what are called the *optic thalami*. And just forward of the optic thalami, on the base of the skull and just before the ears, in man, the anterior columns appear to terminate in two enlargements, surrounded by grey matter, called the *corpora striata*.

18. From the under side of this prolongation of the cord in the skull, arises the olfactory nerves, extending forward and on them, at a little distance from their origin, are two ganglionic enlargements, or ganglia, which are the organs of smell.

We have, then, a series of *pairs* of ganglia along the whole line of the cord. Before it enters the skull, the

sensory roots of the nerves, and on each side of the spine, have each a ganglion before their junction with the motor root. Then in the skull we have the two *olivaria*—the two *gradrigemina*, the two *thalami*, and the two *corpora striata*, and finally the two olfactory ganglia. And even the cerebellum and the cerebrum are double organs, one half of each on opposite sides of a median line.

19. The *optic thalami* and the *corpora striata* appear to be situated on the prolongation of the posterior and anterior columns of the spinal cord, to which, also, nerve fibres from the cerebellum have been added, forming a commissure between these two parts of the encephalon—the cerebellum and the sensorium. From the under side of these ganglionic masses, the *optic thalami* and the *corpora striata*, there emerge nerve fibres, that arise, turn backwards and sideways, so as to unite and form an arch or bridge over the *corpora striata* and *optic thalami*, without touching or resting upon them. This bridge is a commissure between the two hemispheres of the brain, and is called the *corpus callosum*. But it is a matter still in dispute;* whether these fibres are the same as those which form the continuation of the anterior and posterior columns, or whether these fibres end in these masses, and those which are seen to emerge and form the *corpus callosum*, and also the white or fibrous central portions of the hemispheres are totally distinct and different nerves, having their origin in the sensorial ganglia just named.

20. Over the ends of these nerves thus forming the central portion of the hemispheres, there is thrown the cortical covering, consisting mostly of granular or gang-

*MAUDSLEY; *Body and Mind*. p. 24.

lionic matter. The brain thus formed is divided by the longitudinal fissure, which extends from the forehead to the occiput, and reaches down to the *corpus callosum*, nearly into two parts, called the hemispheres of the brain.

Perhaps, however, it would be better to say that the sensory nerves arise in the *optic thalami*, go up to the cortical or ganglionic matter, and then return and enter the *corpora striata*. This would correspond with the direction of the current that passes up from the *thalami* as *sensation*, and comes back to the *striata* as emotion or volition.

21. This grey matter or cortical covering is undoubtedly the organ of thought and all the higher mental functions. It is in man from about one-tenth to a third of an inch in thickness, and is much convoluted, so as to look, in its form, though not in its color, like the intestines, as they are folded in the abdomen; and there seems to be no doubt that there is a ratio both between the intelligence of individuals one with another and the amount which thoughtfulness sustains to activity in any particular individual, and the thickness and convolutions of this grey matter in the covering of the hemispheres, so that the thicker and the more deep the convolutions or the *sulci* of this, the greater the amount and proportion of intelligence.

22. We have already said that there are many reasons for regarding the grey matter within each of the vertebræ as a separate organ or ganglion. They are, *all of them*, however, concerned with the one function of the general sensibility, or the sensations that arise from the subcutaneous tissues, in whatever part of the body situated. But as we approach and enter the skull, we have, as we have said, the seven special pairs of ganglia—

each pair apparently an organ of some one special function—namely, (1) the *corpora olivaria*, (2) *corpora quadrigemina*, (3) *optic thalami*, (4) *corpora striata*, (5) *olfactory ganglia*, (6) *cerebellum*, and (7) *cerebrum*.

With regard to some of these ganglia, or rather pairs of ganglia, there seems to be no doubt as to their functions. Others are still under discussion. One great difficulty, as I think, in the way of any agreement among physiologists is the imperfect definition and faulty classification of the mental phenomena by the psychologists.

23. It is well to consider the progress of development in the Brain. In the lowest vertebrates, as is seen in fishes, the whole encephalic mass consists of three lobes in pairs, on the same line as the spinal cord. The three pairs of lobes or masses are the *optic lobes*, the *corpora striata* and the *olfactory lobes*. The cerebrum is merely a rudimentary membrane surrounding the *corpora striata*. The *optic thalami* are not yet distinct from the *corpora quadrigemina*, and the cerebellum is but a rudimentary covering or patch, a mere junction of the lateral columns as they unite behind the posterior pyramids and the fourth ventricle. The functions of the olfactory and the optic lobes is no longer matter of question: they are smell and sight. What then is the function of the *corpora striata*? It seems to be established beyond controversy, both by anatomy and physiology that they are connected inseparably with the functions of volition and voluntary action: that is in *man* where there is will and voluntary action. And all writers, so far as I know, ascribe voluntary action to even the lowest vertebrates. I shall hereafter give reasons for regarding what is called voluntary action in brutes as only ideo-motor or reflex action. But whatever may be the nature of this class of actions, whether voluntary or only reflex, there

would seem to be no room to doubt that the *corpora striata* are their organ. And this appears none the less from the experiments and observations in the higher vertebrates than from the fact that in the lowest, the *corpora striata* are the only organ that is found besides those of sight and smell.

That the cerebrum in *man* is the organ of thought and the higher forms of intellectual activity is no longer a matter of dispute. And its intimate connection with the *corpora striata* would clearly indicate the connection between thought and all the higher forms of action.

As we ascend up towards man, the optic tubercles become developed into the *corpora quadrigemina*, whose connection with the function of sight is regarded as certain,* and the optic thalami, whose function is yet in dispute. "They seem," says Carpenter,† to participate in the sense of touch, as the sensory columns of the spinal cord may be traced up to them." And if we clearly distinguish, as we must, the sense of touch from that of the general sensibility of the subcutaneous tissues, I think we shall have no difficulty in regarding these ganglia as the internal organ of the sense of touch.

I think that Van der Kalk has shown‡ that the *corpora olivaria* are the organ of expression, both in giving tones to the voice and conformation to the muscles of the face, so that both the voice and the features shall express the emotion that accompanies any thought we may have or express, as well as the thought itself.

*LAXCOCK, however, disputes the view of the function of the *corpora quadrigemina*. "*Mind and Brain*." Appleton's Ed., Vol. II., p. 438, § 994.

† Bohn's Ed., p. 370.

‡ "*The Spinal Cord and Medulla Oblongata*." Chap. VII, p. 179.

We have, then,

- (1) The *olfactory ganglia*, the organ of smell.
- (2) The *corpora striata*, the organ of ideo-motor and voluntary action.
- (3) The *optic thalami*, the organ of touch.
- (4) The *corpora quadrigemina*, the organ of sight.
- (5) The *corpora olivaria*, the organ of expression.
- (6) The *cerebrum*, the organ of thought and the higher intellectual functions.

(7) The *cerebellum*, whose function is in dispute, though its connection with muscular action is not doubted. I would suggest that it sustains about the same relation to the grey matter of the spinal cord and to the lateral columns of it, as the cerebrum and *corpora striata* do to the anterior column *so far as motion is concerned*.

24. This subdivision of the encephalon with reference to functions which the several parts perform, is in accordance with the obvious anatomy of the encephalon. And I think it will be found also to correspond in a very striking manner with the various classes of mental phenomena, when we come to consider them from a purely psychological point of view. But it bears no analogy or resemblance to the subdivision which the Phrenologists make; since their "organs," as they call them, are all irregular cones with their bases on the surface of the brain, and there is nothing in the anatomy of the three parts I have named to suggest such a division or classification.

25. All the nerves come off from the Spinal Axis, or column, and in pairs. Of these pairs, there are commonly reckoned twelve of the cranial nerves, that is, of those that come off in the skull, and twenty-four, or more, pairs of the spinal nerves, or nerves that come off after the cord leaves the *foramen magnum*. Of the nerves that

originate in the skull, the first pair, beginning at the forehead and counting backward, are the olfactory—the nerves of the special sense of smell, the second are the optic—the nerves of the sense of sight, the third are purely motor nerves, and regulate the motions of the eyes.

26. It is not easy to say precisely what is the function of the cerebellum. The view maintained by Carpenter, that it is the organ for the combination of complex motions—as when we move several limbs at once—seems to have been effectually disproved by Van der Kalk in the work on the Spinal Cord and Medulla Oblongata, just referred to, and we must admit that for the present its function is at best only a matter of conjecture. It may be merely a reservoir of power, a sort of Leyden jar to the motor force of the spinal cord. In this view, a sensation which would not be in itself, and simply, sufficient to produce a motion, becomes intensified until motion ensues.*

27. The grey matter in the skull is not a continuation of any other mass of the same kind of matter, but like

* Its connection with the hemisphere by means of the *iter e cerebello ad testes* or upper *crura*, would seem to indicate a connection of its function with that of the hemispheres. Perhaps these *crura* are channels through which the voluntary impulses that descend from the hemispheres to assist, and give strength and force to the excito-motor impulses of the body, and which are often necessary to produce muscular contraction, and so motion. There seems to be no doubt that the *lateral* columns are especially connected with the muscles of the body, as the anterior column is with the limbs. The *corpora striata* stand at the head of the anterior columns, as the cerebellum does at the head of the lateral columns. If this view be correct, it follows that in all voluntary effort and action, we control the limbs through the *corpora striata* and the muscles of the body. The diaphragm and the abdominal muscles are controlled through the cerebellum. Moreover, it is ascertained by experiment that all those

all the other ganglionic masses, it is separate and distinct in itself and connected with others only by the tubular matter. In this way the sensory or ganglionic matter of the hemispheres is connected with both the *corpora striata*--the organ of volition, and the *optic thalami*, which, as I think, are clearly the organ of that form of perception that has been called ideation, or that in which we perceive external objects as realities having form, density, color, etc.; and thus we have the circle complete. An object produces its effect upon the eye, for example, we perceive it by the *optic thalami*, we think of it, and choose about it by the brain; and this volition passes to the *corpora striata* and then along the motor fibres to the muscles that perform that which by willing we had chosen to do.

28. It was once held that the four columns of the tubular matter in the spinal cord, namely, the anterior, the posterior and the two lateral (considered, however, as one), had each a special function in transmitting sensations and emotions. In this view, the posterior column (both halves of it), carried up the sensations, both of the

instinctive actions by which we preserve ourselves in an upright position, move our legs, etc., in our efforts to recover our equilibrium when we are falling, etc., are excito-motor, and lead, therefore, through the spinal cord. If the view presented above be correct, it will follow that the cerebellum is an essential organ for all these acts; and this, I think, will explain the facts that have appeared to Carpenter to prove that the cerebellum is "the organ for the co-ordination of actions," while Van der Kalk, Brown-Sequard, Vulpian and others have shown that Carpenter is wrong in some parts of his theory, at least; for the co-ordination is to some extent, if not wholly effected by the decussation of the fibres of the anterior columns. See, however, the opinion of LAYCOCK cited above, p. 14. His suggestion deserves, and certainly will receive, most careful consideration.

general sensibility and of the sense of touch, to the brain, terminating in the *optic thalami*. The anterior column was supposed to carry down the emotions for the arms and legs, having their origin in the *corpora striata*, and the lateral columns were thought to carry the emotions that reached the muscles of the trunk of the body, such as the intercostal, abdominal, etc.

But this view has been questioned, and in fact seems to have been disproved. It is doubtful if many of the nerve fibres go the whole length of the body and enter the skull. They seem rather to arise in the grey matter of one vertebra, and after passing up or down through several of the vertebræ enter again the grey matter and disappear.

29. The following facts, however, seem to be established by the experiments and reasonings of Brown-Sequard :

(1) That the posterior portion of the cord including the grey matter is the channel for conveying sensations up from the body to the brain, and that probably different parts of this portion convey different kinds of sensations, as those of cold and heat, of tickling, of pain, etc.

(2) That in the Medulla Oblongata, the *voluntary* efforts pass from the brain through the lateral columns, and then into the anterior columns and so down them to their distribution by the efferent or motor nerves to the muscles concerned in the motions that are produced by the volition.

(3) That below the Medulla Oblongata, the lateral columns seem to be the channel for the return of the reflex emotions which are concerned in preserving the body in its erect position, etc., etc., of which we shall have occasion to say much more hereafter.

The whole subject, however, is involved in much ob-

scurity, and is matter of wide difference of opinion and much controversy among the ablest physiologists of the day.

30. I have referred to the two kinds of tubular nerves, the afferent and the efferent, the sensor and the motor, or the centripetal and the centrifugal, and have alluded to the fact that they originate in the same ganglion. If now, a sensation be produced in the sensory nerve it will pass up to the ganglion in which it arises and be returned or reflected back by that ganglion instantly, down the efferent or motor nerve as an emotion, producing what is called a reflex action. Thus, if one should put his hand against a hot iron, he would be seen to jerk it back instantly. The sensation of pain passes up to that ganglionic part of the spinal cord in which the nerve originated, and is then converted into an emotion and sent back along the motor nerve that runs close to the sensory nerve along which the sensation had passed, to the muscles that move the limb in which the sensation originated and produces the motion which draws the hand away from that which had caused the pain. In this case, we are not only conscious that we did not voluntarily draw away our hand ourselves; and we may easily become conscious, if we will but try the experiment, that we could not hold the hand there if we would.

31. These reflex actions may be performed in sleep and even after death. They may be performed, in the case of the lower animals, on even a small part of the body after the rest has been removed. Thus, "It is well-known that if the hind foot of a frog that has had his head cut off be pinched it is withdrawn from the irritation. When the foot is pinched more strongly, there is a simultaneous withdrawal of both limbs, and if the ex-

citation be stronger still, a movement of all four limbs follows. Touch, with acetic acid, the thigh over the internal condyle and the animal rubs it off with the dorsal surface of the foot of the same side. Cut off the foot, and apply the acid to the same spot, and the animal tries to get at it again with its foot, but of course, having lost it, cannot. After some fruitless efforts, therefore, it gives up trying in that way, seems restless, as though it was seeking some other way; and at last, it makes use of the foot of the other leg, and succeeds in rubbing off the acid."*

32. Szokalaski says that he found in the case of dogs and rabbits, that after he had removed the brain entirely down to the *medulla oblongata*, they would cry when their tails were pinched, and rub their noses, when any powerful irritant was applied to that organ. They would grind their teeth, if anything peculiarly acrid or bitter was put into their mouths, showing clearly that all these actions may be involuntary, and so purely reflex, performed without intelligence or will.†

33. The nerve centres may thus be regarded, for most purposes, as three in number, (1) the spinal axis, (2) the sensorium, including the ganglia at the base of the brain and (3) the hemispheres. Each of these is the centre of a large class of functions and emotions, which, in themselves, constitute three grades of life.

(1) The spinal axis is the organ of all those vital functions which man has in common with vegetable life, and the life of the lower animals which have no special

* MAUDSLEY, "*Body and Mind*," p. 15, 16.

† *Prager Vierteljahrschrift*. 1854, B. I, p. 79.

For this quotation, however, I am indebted to VAN DER KALK. "*Spinal Cord and Medulla Oblongata*," p. 99.

affections, no attachments, and are capable of only those pains and pleasures that come from the mere condition of their own bodies.

(2) The sensorium contains within itself the organ of perception, and is the seat of the affections that bind man to his fellow man, and make him a social being. Its functions, however, do not raise him above the grade of mere animal life—the life of attachment to, and care for a fellow being, such as we often see animals of the higher orders manifest.

(3) The brain proper, that is, the hemispheres, is the seat of a higher life. By this, we have thoughts and emotions of a higher order—emotions of right and wrong, emotions of beauty and sublimity, of duty and obligation, the sense of the eternal and the divine, with will and purpose to execute thought, and direct actions to a chosen end.

34. That the intelligence of any order of beings, and of any individual in any order bears some proportion to the ratio between these two kinds of nerve matter—the grey and the tubular—and also to the ratio that exists between the size of the different organs named above as constituting the three centres of life, is a fact generally admitted. Without taking into account the three subdivisions of the animal kingdom below the vertebrates whose nervous systems are too unlike that of the vertebrates to allow of such a comparison, we have as an approximate estimate of the ratio, the following: The brain to the spinal cord, in fish, is as 2 : 1 ; in reptiles, 5 : 2 ; in quadrupeds, 4 : 1 ; in man, 23 : 1.

35. The sensory nerves are divided according to their functions into six classes, each having an organ of its own, and performing a function peculiar to itself.

Of these, the first in order is the pair of olfactory

nerves, coming off from the olfactory ganglia in the extrémé anterior end of the sensorium, or prolongation of the sensory matter of the spinal axis. They pass downward, and are distributed over the lining membrane in the nostrils.

We have, in the second place, the optic nerves which come off from the sensory tract, further back, taking their origin in what is called the *corpora quadrigemina* and extending forward over the *optic thalami*, and crossing each other with decussation, they enter the eye-balls and are then connected with the external organ of vision.

In like manner, we have a nerve of the sense of hearing distributed to the ear; and one of taste distributed to the tongue. Then, as a fifth kind, we have the tactile fibres of the sensory portion of what have hitherto been regarded and treated as the nerves of general sense, distributed to the skin; thus constituting it the external organ of touch.

And finally, we have the other portion of the nerves of the general sensibility distributed to the subcutaneous tissues, as the muscles, the bones, etc., giving to them a susceptibility to pain, to pressure, to fatigue, etc.

36. Brown-Sequard, indeed, claims to have found eleven different kinds of sensory nerves among those that come off from the spinal cord; one, for example, for touch proper, one for tickling, one for pain, another for temperature, etc. But this subdivision, I regard as uncertain, and based rather upon a defective psychology than founded in any well ascertained difference, either of structure or function.

37. In addition to the six kinds of nerve fibre, divided according to their respective functions, I am inclined,

for various reasons, to think that the sympathetic nerve itself is a nerve of sensation for the viscera contained within the abdominal cavity. In favor of this opinion, many curious facts could be adduced, which, however, it seems hardly worth while, in view of the object we have before us, to pause to consider.

38. It was for a long time uncertain what was the nature of the termination of these several nerves of special sense, and where we are to look for an explanation of the fact that they convey to the brain sensations that are so widely different in their character. It was at one time supposed that they terminated in small masses of granular or ganglionic matter. But it has at length been settled, I believe, that they terminate in a peculiar kind of tissue, which, for want of any other name, we may call sensory tissue; and the inference is drawn that the diversity of sensation depends upon the diversity in the nature of this tissue as situated in the different organs of sense. This, however, is not, in itself and alone, quite sufficient; for we know that if any one of the nerves of sensation be cut in two any where between its origin in the ganglion and the sensory tissues in which it terminates, and the end of the part of the nerve leading up to the ganglion be irritated, a sensation is produced of the same kind as if the irritation had been applied to the sensory tissue at the end of the nerve. Thus by irritating the optic nerve any where in its course, we get a sensation of light. The same cause acting upon the auditory nerve, would produce a sound, acting upon the olfactory, a pungent odor, acting upon the gustatory, it would produce the sensation of an acrid taste.

39. Of the six kinds of sensory nerves above enumerated, smell, sight, hearing, taste, touch and general sensibility, the first named four have been generally called by

physiologists nerves of special sense, (chiefly, perhaps, because they have special and local organs) and the fifth and sixth (touch and general sensibility) have been, for the most part, regarded as one and the same. But the skin is an organ as special in itself (though far more generally distributed) as the eye or the ear; and its sensibility is as distinct from and independent of that of the tissues that lie below it as is that of the eye from that of the ear, or the skin itself. The sense of touch in the skin is often paralyzed and lost, while that of the general sensibility to pain in the subcutaneous tissues remains. This is, in fact, generally, if not always, the case in the disease known as *tabes dorsalis* which consists of a softening of the posterior column of the spinal cord.

40. Although there can be no doubt that every sensation, every act of perception, imagination, reasoning, memory, etc., is accompanied with some change in the tissues of the nervous system, we are unable as yet to say precisely what that change is. It is probable that we shall never know fully and completely. It is, however, believed that the change is both chemical and mechanical. It is observed that after periods of unusual intellectual activity, the quantity of the phosphates in the excretions is perceptibly increased. Now as free phosphorus is found only in the brain, the inference was formed that in times of unusual mental activity, the phosphorus becomes oxydized into phosphoric acid, and this acid, as soon as it finds its way into the general circulation, reunites with the metallic bases, potassium, sodium, calcium, etc., forming the phosphates, which are eliminated by the skin and kidneys.

41. And analogy would lead us to suppose, moreover, that there is some activity of a mechanical kind among

the cells or molecules of the substance of the brain and other tissues. So it seems probable that the difference between one sensation and another, and one thought or volition and another, is attended by, and, in a measure, dependent upon some change or diversity of condition and arrangement among these organic elements of our nervous system. But no man can tell now, nor is it likely he will ever be able to tell, why precisely such a state of these elements is accompanied with precisely that sensation or thought, and no other, or what is precisely the relation between the two.

42. The active states of these organs, some of them at least, we call by different names, considered from a psychological point of view. Of these, we may name, for the present, five different classes.

(1) Any active state of the sensory tissue in which the nerves of sense terminate, passing *up* to the nerve centres, we call a "sensation." When the sensation reaches the sensorium "perception" takes place, and that is the name which we give to the act that then occurs, regarded as a psychological phenomenon.

(2) An "emotion" is an active state of the nerve centres, as spinal axis, sensorium, or hemispheres, passing *down* the motor nerves to the muscles and tending to produce action, which may be either a motion of the body, or of some part of it, as the vocal organs.

(3) Any active state of the sensory tissue constituting the *optic thalami* and perhaps the *corpora quadrigemina*, constitutes what is called an "idea" in one of the senses of the word—the sense namely, in which an idea is regarded as a representative or image of an external, visible object.

(4) Any active state of the hemispheres is more commonly denoted by the word "thought" as being more ab-

stract and comprehensive than the word "idea," as used in the preceding paragraph.

(5) Thought precedes volition, and the action extends from the hemispheres in which thought takes place, down to the *corpora striata*, and when they become active, we have what is called "volition," "will," etc.

43. Most of the organs that I have described exist and act in pairs, and when they are connected by nerve fibres or commissures, they act in harmony, with a unity of result in the activity of the double organ. When, however, one of a pair of organs becomes diseased or inactive from any cause, the other continues to perform the function—though imperfectly—as in case of persons blind of one eye, or deaf with one ear.

44. In the same way it seems that one of the hemispheres of the brain may be entirely inactive, and yet, the mental functions continue to be performed with vigor and regularity that often prevents, for a long time, the defect of the organ from being suspected. In some cases, it would seem as if the hemispheres alternated in their action, one being active while the other is at rest. An effort has been made to explain a peculiar form of insanity called "double consciousness," by supposing that one hemisphere is active in one of the states of mind and the other in the alternate state, and that the cause of the diversity in the two states may be either a difference in the hemispheres like what we sometimes see in the eyes, or some defect in the commissural connection of the two organs. In these cases of double consciousness, there is a succession of states, in any one of which, the patient never remembers what occurred in the one immediately preceding it. These states usually alternate and follow a series, as 1st, 3d, 5th, 7th, etc., and 2d, 4th, 6th, etc., so that in any one of the odd numbers, the patient

remembers what occurred in the preceding odd number, and, in like manner, in the even numbers, he remembers only what occurred in the even numbers preceding it.

45. It may be well to add in conclusion of this lecture, that insanity has come to be regarded, in view of the physiological facts of which I have been speaking and many others like them, as purely a *physical* disease, a disease resulting from either organic lesion or functional derangement of the organs through which the mind acts. Thus, if the eye or the optic nerve is diseased vision is impaired or totally suspended. So, with a diseased condition of any part of a nervous centre, we have a corresponding derangement of the function which if the organ be encephalic, constitutes some one of the recognized forms of insanity. And the study of the forms of insanity during the life of the patient, and the comparison of them with any abnormal or diseased condition of the tissues as they are found after death, has been one of the most effectual means of studying and ascertaining the functions of the various parts of the nervous system and their connection with mental phenomena.

LECTURE II.

SENSATION AND EMOTION.

1. It is customary to divide all the facts and phenomena of Psychology into three classes, namely, those that belong to Intelligence, those that belong to Sensibility and those that belong to Will. This division is, for many purposes, very useful; and yet, it is impossible to discuss any one of the classes fully without some knowledge of the facts in the others. Thus, sensation is clearly a class of phenomena belonging to sensibility; but we could not discuss perception without a preceding knowledge of sensation. Nor having discussed sensation, can we go on and discuss the other phenomena of sensibility without a knowledge of the facts and phenomena of intelligence.

I shall, therefore, consider sensation first in its relation to emotion and reflex action, and then recur to it and consider it in its relation to perception and the other more purely mental functions.

2. I am disposed, contrary to the common usage among writers on psychology, to regard sensation as a purely physiological phenomenon. As the word "sensation" is almost, if not quite, invariably used by that class of writers, it is not easy to distinguish sensations

from perceptions; and in fact the words seem to be used indiscriminately. Confusion and indistinctness of doctrine is the inevitable result. But, in the classification which I propose to adopt, a sensation is any state of the sensory apparatus, including in that word the sensory tissue and the nerve in which it terminates. And the moment this condition reaches and affects the nerve centre, we have several classes of phenomena which are emotions, perception, imagination, etc., according to circumstances.

3 Sensations ordinarily commence in the sensory tissue in which the nerve of sensation terminates. And, in all cases, in order to be a means of perception and knowledge, they must commence there. If, however, as already remarked, any sensory nerve be irritated any where along its course, from its termination in the sensory tissue up to its origin in the ganglion, a sensation will be produced *the same in kind* as if the irritation had taken place in the sensory tissue itself. Thus, if the optic nerve be irritated, we do not, indeed, see any object distinctly, but we are conscious of a flash of light. One of the most common cases of this kind is found in the pains felt after the amputation of a limb, the pain is always referred to the extremity—hand or foot—that is gone.

4. It results from the definition I have given to the word sensation that I must disagree with another of the commonly received doctrines concerning sensation. In my view, a sensation need not be a matter of consciousness at all, and will not be so, unless it extends to the sensorium. This is contrary to the common doctrine. But undoubtedly we have states of the nervous tissue that do not reach the sensorium, and of which we are not conscious. They differ, so far as we can see, from

what the writers on metaphysics call sensation only in the single and accidental fact that they do not extend to the sensorium. An electric shock, for example, when applied to the foot or the hand of a dead person, will produce contraction of muscles and motion of the limb, as if the person were alive, and of which he would be conscious if he were living. The same result will take place, also, after the entire removal of the brain; and it seems to me that the phenomena are precisely alike in both cases, in all that is essential to them. And hence, I prefer to call them by the same name, and consider them as of the same class rather than to have two names for phenomena which are so obviously of the same kind.

5. Every sensation is attended and immediately followed, in *human* psychology at least, by two consequences. The one is what we call an emotion, a stimulus to the motor nerve fibres, and the other is an act of the mind which we call perception. By the perception, we become aware of the object that produced the sensation. This act of perception, however, cannot take place without consciousness of the act itself; and usually other acts of thought follow.

6. Carpenter, at first, divided the reflex emotions into *four* classes, excito-motor, sensori-motor, ideo-motor, and emoto-motor. But later writers have concurred in regarding them as constituting but *three* classes, retaining the three names first mentioned, and omitting the last, emoto-motor, though making it nearly the same as his ideo-motor.

(1) There are three distinct centres in which they originate, namely, (1) the spinal cord, (2) the sensory ganglia, including the medulla oblongata and (3) the hemispheres of the brain, or, possibly, the corpora striata

which are intimately connected with the hemispheres of the brain.

(2) In a psychological point of view, they differ in this : the first class, excito-motor, which have the spinal cord for their centre and origin, have only sensations for their antecedent and cause, and, for the most part, if not exclusively sensations of the sixth or general sense. The *second* which are called sensori-motor have the sensorium for their origin and centre, have in the ordinary condition of human intelligence, an act of perception for their immediate antecedent and cause, while the *other* class, called *now* ideo-motor, and which have the brain for their origin and centre, require and have for their immediate antecedent, in man at least, an act of insight.

It would thus seem that the grounds of the classification are as clear and complete as could well be desired.

7. We have already examined the structure of the nervous system in reference to sensations and emotions. We have there seen that the tubular nerves are of two kinds, the one kind carrying sensations from their extremity in the periphery of the body to the ganglionic centres in which they had their own origin ; and the other conveying emotions from these centres to the muscles which regulate and produce the motions of the body. We have also seen that whenever we have a sensory or afferent nerve ending in any tissue or organ, we have a branch of the motor or efferent nerves arising in the ganglion in which the sensory nerve terminates, and in the closest proximity with its roots, going from them to the muscles lying directly under the end of the sensory nerve, or to those regulating and producing the motions which the sensations ought, in the economy of life, to occasion.

8. For the most part, and throughout all the spinal nerves, these two branches or kinds of nerves, although originating, as we have seen, by two distinct roots, soon join, and from that point, proceed on together, and are no longer susceptible of being discriminated from one another by the ordinary process of dissection and microscopic inspection. But among the cranial nerves, we find in some cases nerves that are exclusively sensory, as the optic and olfactory, and some that are exclusively motor, having no sensory fibres whatever. And yet, sensations passing up them, as the optic, for example, produce reflex actions, no less than those which pass up other nerves, although motion is conveyed down or outward by an entirely distinct and different nerve. Thus, in the involuntary act of swallowing, the sensation passes up the glosso-pharyngeal, and is returned as emotion by the hypoglossal nerve.

9. Now by means of this economy of reflex actions, man would be an active being without mind, intelligence, consciousness or will. He would be one wheel in the machinery of the universe, acting as he is acted upon, in obedience to the universal law of mechanics, namely, that motion is always the product of force, and a measure of its intensity. The nervous system would be but a combination of cords and pulleys by which any external object, and even the condition of our own bodies, also, would send up a sensation to the ganglionic masses in the centres by which, as pulleys, the direction of the sensation would be changed, the sensation become an emotion and be sent out along the efferent nerves, and thus by contracting the muscles, move the limbs. Man would be but a machine—a mere jumping-jack—in which we have but to pull the string, and the arms and legs move at the will of him who operates it, or by the

influence of the external object that caused the sensation.

10. Man is always and continually being thus acted upon. There is not an object perceived, but that the sensation which precedes and occasions the perception, produces some emotion also, as if one part of the sensation passed up the cord to the optic thalami, occasioning perception, and the other was reflected back, down the motor fibres, going to the part where the sensation originated. And if each external object that is perceived and when it is perceived, occasions a reflex emotion in this way, there is not a condition of a tissue, limb or organ of the body that is not, whether we are sleeping or waking, by its condition, causing a reflex emotion. In some cases, these emotions cause actions of which we are unconscious, as in sleep, and when intensely engaged in some mental effort. In others, they are strong enough to produce involuntary and spasmodic actions which we can neither prevent nor control, as in St. Vitus' dance. But for the most part, they are too feeble to produce anything more than a mere inclination to act; and to a great extent, they are so feeble that we remain unconscious of them altogether.

11. And besides this, they seem to have a capacity for increasing in intensity, as if accumulating in amount, under certain circumstances, until that which was so feeble at first, as scarcely, if at all, to be matter of consciousness, comes to be an uncontrollable impulse or passion. This is, in many respects, like the accumulation of electricity in a Leyden jar, until from a very small battery, we obtain power enough for an explosion of any degree of severity we may desire. Suppose one sits down, for example, in any position, the posture may at first be agreeable to him, but, after a while, he be-

comes fatigued, and the unrest grows to such a degree of intensity that he cannot sit still. One can sometimes hold his hand over a very hot fire for a few moments, but shortly it becomes so painful—the reflex emotion increases to such an extent—that he cannot hold it there any longer.

12. Not only, therefore, do those objects which are external to the mind, whether our own bodies or the objects around us which we perceive, cause a large share of our actions, without consent or co-operation of will on our part, but they enter largely as one of the forces that produce any voluntary action. When consciously felt, though insufficient to produce involuntary action, we co-operate with them by an effort of will. As for example, when one is hungry, but not sufficiently so to be unable to control and restrain himself, or when one is tired of sitting in one position, and yet, not so tired that he can not sit longer without moving, we have occasions in which we supplement the reflex emotion by the force of will in order to produce the action. In other cases the emotion becomes so strong that we cannot resist it, though conscious of an effort to do so. He that has wept when manliness would have induced him to suppress his tears, or he who has laughed when conscious of the impropriety of doing so, and yet unable to suppress his laughter, has had experience of the conflict I am speaking of.

13. Emotions of the first class—excito-motor—having as they do the spinal cord as their origin and centre, can not be produced by sensations of either of the four senses that have their origin in the head, as seeing, hearing, tasting and smelling, for the obvious reason that the nerves of those organs have their origin in the sensorium and do not go directly to the spinal axis at all. And so,

I think, it is with sensations of touch also, if they are properly distinguished from those of the general sense, which belongs to the subcutaneous tissues. I doubt whether a sensation of touch proper is ever complete, so as to produce perception or consciousness of the sensation until it reaches the optic thalami. But just as in the eye and the other cephalic organs, it is almost impossible to produce any sensation that affects their peculiar nerve without affecting, also, the branch of the fifth pair that is distributed to them; so with the skin, it is almost impossible to touch the skin, without producing compression or other effects that extend through the skin to the tissues below, and which, through them, may produce excito-motor emotions, although no such emotions could originate from the sensations produced in the skin itself.

14. But emotions of this kind keep the vital functions in operation. They produce the pulsations of the heart, the expansion of the chest, occasioning the inspiration of air, and thus, keep up the process of respiration and circulation alike. When the stomach is empty and the coats are in a condition to digest food, they constitute what we call the sensation or appetite of hunger; and, as excito-motor emotions, they predispose us to take food. When the food is masticated and passed back to the roots of the tongue, the sensation produced by its presence is referred to the medulla oblongata, and a motion of the muscles ensues in that region, which propels the food down into the stomach, without voluntary aid or possibility of resistance.

15. And so, too, when any violence is being done to any of the tissues, the sensation of pain becomes an excito-motor emotion, the first effect of which is, perhaps, a disposition, often quite irresistible, to withdraw the

suffering limb from contact with the cause of the suffering. And when relief ensues from this act, the sensation ceases or becomes so abated and mitigated that we cease all other efforts. In other cases, however, the pain becomes not only an unrest, disposing us to further activity, but it becomes a stimulus to the mind to seek out and apply some means of relief from the pain, some remedy for the injury done.

16. Emotions of this kind can be produced, not only in the unconsciousness of sleep, but also in the insensibility that ensues after death. Not only do the heart and lungs continue their action while we sleep, but unpleasant objects brought in contact with different parts of our bodies cause motion in those parts. If we tickle the bottom of one's foot in sleep, he will withdraw the foot as though awake, but without consciousness at the time; as we infer from the fact that it may be done without dream or recollection after waking. And even after death, by the application of the powerful stimulants which electricity and galvanism furnish us, we can cause motions, similar in their outward form and appearance to those that are performed voluntarily in life. In the case of the lower animals, these experiments can be performed to a much greater extent and much more satisfactorily than upon human beings.

17. Emotions of the second class—sensori-motor—are caused by external objects. They are produced by a sensation of one of the special senses. These sensations come to the sensorium, and, of course, therefore, produce in man, when awake and in health, both perception and consciousness of the sensations, as well as the sensori-motor emotions. If I am right in the positions I have taken about the sense of touch, namely: (1) that it has a special organ, the skin, and is, therefore, to be regarded

as one of the special senses, and that (2) sensations by this organ do not produce excito-motor emotions, but rather sensori-motor, it follows that the excito-motor are produced exclusively by our own bodies and bodily conditions, while the sensori-motor are produced entirely by objects external to ourselves.

18. The distinction is important rather in a psychological than in a physiological point of view. If I am right in this matter of classification, we have this further proposition, namely; all the excito-motor emotions are *selfish* in their character; that is they have self as their object, and the acts to which they prompt are for self,—for the relief, comfort and gratification of self, and look to self only as the motive of action. Nor is this all: they look to what we sometimes call man's *lower* nature, his mere bodily comfort and enjoyment, ease and freedom from pain and discomfort of any and all kinds. The man acting under the influence of these emotions will make no sacrifice even for the sake of a friend; he will not so much as submit to any present inconvenience, privation or restraint for the sake of his own future good, to avoid shame, disgrace, poverty, disease or even death. He would not be capable of remorse, as that feeling belongs to emotions of a higher order.

19. But the emotions of the sensori-motor class are all *social* in their character, if I am right in referring those of touch proper to this class. I say "social" not because they are always or chiefly directed to *persons* with whom association is possible, but rather because this is their highest and most appropriate manifestation. Being excited, in all cases, by objects out of ourselves and leading to actions which tend to and end in them, for their good or their harm, when directed to individuals of our own species, they not only make society possible, but

they actually lead to those associations which result in such institutions as the family, the church and the state.

20. And, it is undoubtedly true that in their lower forms and in some of the varieties of this class, self rather than anything else seems to be the object of the emotion. If, for example, one is startled by a sudden sound, or, if he is surprised by the sight of something coming directly towards him, the emotion is, doubtless, sensori-motor in its origin. But then, it seems to pass into the nerve centre of the excito-motor emotion and we seem to startle and move, rather to save ourselves from harm than to do either good or evil to that which caused the emotion. But so soon as we have had time to think, the emotion assumes the character of love or hate, fear or hope, terminating in the object that excited the emotion. And the fear and hope may be as selfish as indolence or any other form of self indulgence.

21. Another important distinction between the two, growing, indeed, out of the one we have noticed, is this: that while we express the excito-motor emotions by verbs that are intransitive, as "I am hungry," "I am tired," "I am sleepy," etc., etc., we express the sensori-motor feelings by a transitive verb, as "I love *this*," "hate *that*," "I hope *this*," or "fear *that*," etc., etc. Thus, if one starts and shrinks at a sudden sound or the sight of a frightful object, it is because it excites fear, and so soon as the processes of reflection and reason have gone far enough to enable us to express the state of our emotion, we may indeed, put the expression in the form "I was afraid," but more explicitly and fully "I feared [that which I saw or heard], etc.

22. But objects around us are constantly exciting the emotions which produce, or tend to produce acts of this

kind, acts that proceed from what we call the affections of love and hate, hope and fear, etc. The emotion that prompts the almost irresistible impulse, especially noticeable in children, to take hold of and handle whatever pleases and excites emotions of the nature of love towards such objects, is of this kind no less than those that I have already spoken of as producing fear, and causing, on the instant, a shriek or a sudden involuntary motion of escape. And, in the earliest periods of infancy, emotions of this kind seem to make up about all that there is of influence exerted by external objects over the incipient human being.

23. It is hardly possible to produce phenomena of this kind after death, or in any state of unconsciousness where there is no possibility of the interference of volition. We affirm that there are such actions during life, purely reflex in their nature, however, on two distinct grounds, one physiological, the other psychological.

(1) In the first place, the structure of the nerves and nerve-centres leads us to expect by analogy that there will be the same kind of phenomena here as have, beyond question, been produced in the excito-motor actions of the spinal axis. The structure being so similar in the two cases, we can hardly doubt that there is a like similarity of functions.

(2) We have consciousness of such emotions and their effect upon us. We cannot resist the emotion to shut the eye when we see something approaching likely to enter it. If the danger be great, we move the whole head—perhaps, give a leap with the whole body and utter an outcry. These acts are not only involuntary, as not being caused by an effort on our part, but involuntary also, in that other sense, of being caused against our will, so that we could not prevent them if we would.

24. It has been commonly held by writers on the subject, that there are no sensori-motor emotions, and no actions proceeding from them without a consciousness on our part. Now it is undoubtedly true that when the organs are in their normal condition, and *we are awake*, both perception of the object and consciousness of that perception do accompany the emotion. But, as in the excito-motor emotions, so here, also, consciousness is not indispensable—it is a mere accident, though an accident of pretty uniform occurrence. Whether perception be indispensable or not, depends upon the scope we give the word and certain theoretical considerations that we need not here discuss. But that consciousness is not indispensable, is proved by the fact that some of these phenomena can be produced in sound sleep and in coma and apoplexy. In sleep, we start at sounds, and in cases of coma or apoplexy, patients will frequently move their eyes at the sight of objects, and turn the head from those that have a disagreeable odor, acts which under the circumstances cannot be supposed to be other than sensori-motor. They are certainly without consciousness.

25. There is an important relation between the two kinds of emotions just described that ought to be noticed before passing on. They are so intimately connected that the one can scarcely exist without the other. Pleasant emotions of the excito-motor kind tend to produce, or favor the production of, sensori-motor emotions of the benevolent or hopeful kind. And on the other hand, excito-motor emotions or bodily feelings of an unpleasant nature—painful—make us impatient and fretful and always predispose to unkind feelings (towards others) of a sensori-motor nature. And this we might infer from the physical relations of the two centres of these kinds

of emotions—the spinal cord and the sensorium—the latter being scarcely more than a continuation of the former. Hence it is possible that good and benevolent *acts* may be done from excito-motor emotions that are purely selfish, with no element, or only the smallest conceivable amount, of benevolence in them, and on the contrary, acts that are apparently malicious and designed to harm others, may have no motives of the kind, and spring only from nervous irritability—a class of motives of purely excito-motor origin and nature.

26. These two classes of emotions have an important influence upon speech also as well as action. We have noticed the situation of the corpora olivaria—the organ of expression—as within the medulla oblongata. It is hardly possible, therefore, for anything to affect either the spinal cord or the sensory ganglia without extending its influence to the corpora olivaria. This fact will account for the difference in *tone* between sounds which express different classes of emotions, as pain or pleasure, grief or rejoicing, hope or fear, love or hate, etc. This difference is observable even when the words pronounced are precisely the same. Hence it comes to pass, also, that the tones of the voice are to a large extent indications of the character and habitual feelings of the individual. The words one uses are derived from the society in which he lives, but the tones in which he utters them are determined to a large extent by the character of the person who uses them.

27. Nor is this all. Language is made up of words which stand for things. But the words to make language must be combined into sentences. Now, not only are the words associated with the things, or rather, the thought of them, but we form the habit of uttering them when we wish to call the attention of others to

the things we are thinking of. This habit comes to be an act of the same nature as a reflex action, as we shall see more fully in a subsequent lecture; so that when we are thinking of a thing there is always a tendency to speak the name of it as well as to express by the tone in which we utter the name, the emotion it is occasioning at the time.

28. And more than this. The laws of syntax by which words are combined into sentences, come to be habits also, so that even without knowing what the words mean, we often put them together according to the laws of syntax, while yet the sentence has no meaning. But even when they have a meaning *for the hearer*, they often express no thought that the speaker has in mind. They merely express a state of feeling, an emotion, restlessness, impatience, love, hate, etc. And thus in many cases, and especially with persons of little thought, the merest physical or animal emotions, with scarcely thought enough to know that one is speaking—not enough to know what he is saying—keep the tongue running, and give to the vocal organs a sort of constitutional uneasiness that allows them no rest.

But let us now pass to the consideration of the third class or ideo-motor emotions—so far, at least, as they are of a purely physical character, also.

29. The brain, consisting of the hemispheres, is a ganglionic organ connected with (1) the organs of special sense by sensory fibres going up from the sensory ganglia in the sensorium, and (2) with the muscular system by motor fibres, passing down from the cortical covering which is really the ganglionic envelope of the tubular portion of the brain. Hence analogy of structure and position would lead us to expect that the brain would possess a power of reflex action, differing from the other kinds, as its general function differs from theirs.

30. But besides this, we are conscious of emotions of a class differing in one essential feature, at least, from those which we have referred to either of the other classes. Thus, suppose one is listening to some narrative of a tragic event in which there are no signs or descriptions of physical suffering—the recital may cause not only grief but weeping and convulsive sobs also. It is certainly possible that such results might follow the mere sight or imagination of physical suffering. But in the case supposed, there is nothing to affect the feelings without some insight into and some comprehension of the nature of the scene described.

31. Or again, the emotions of admiration or disgust which arise from objects that do not affect the senses with any peculiar intensity, but only please or offend by their intrinsic beauty or ugliness, excite emotions which presuppose as their intellectual antecedents, not sight and hearing only, but insight and comprehension as well. And yet, by all the features of these emotions, as presented to us in consciousness, they are of the reflex character. They are physical as proved from the fact that they do not end in mere feeling; they tend to produce action. They often produce those involuntary, and even irresistible contractions of the muscles which occasion utterance by the vocal organs, or motions of the face and limbs—we exclaim with delight or disgust, we lift the hand or make other gestures significant of the emotions we feel, and that, not only involuntarily, but, in many cases, contrary to our intention or sense of propriety.

32. The experiments of physiologists prove beyond a question the reality of ideo-motor emotions, or emotions reflected from the hemispheres of the brain as a centre, and entirely distinct from the sensorium or the spinal

axis. But the brain seems, in many cases, to be something more than a source of ideo-motor, reflex actions. It seems to increase the intensity of the reflex emotions of the two lower classes. It gives intensity to the excito-motor and the sensori-motor, so that in all cases when the hemispheres are removed or paralyzed there is a partial paralysis or insensibility of the whole system. While, therefore, the reflex emotions obey in general the physical laws of motion equal to the force that produced it, and action and reaction are equal to each other, in these cases, the reaction seems to be much greater than the action, or in other words, the emotion seems to have a much greater intensity than the sensation that preceded it, and caused it. And this, too, I think, without any voluntary element or action of the will exerted either consciously or unconsciously in the same direction as the emotion.

33. Now as we study these emotions in the human consciousness, we find them mixed up with other elements in such a way as to make it difficult to see precisely what they would be when not intermixed with such elements, and even to leave some room for question whether they exist without those elements.

(1) But in the first place animals have the organ, the hemispheres of the brain or the cerebrum, in which these emotions have their origin, and it is too large in the higher vertebrates at least, to allow us to regard it as merely rudimentary.

(2) In the second place animals never manifest any of those forms of ideo-motor emotions which we have named above, and which imply an insight into the nature of the thing perceived; they show no appreciation of beauty, etc.

(3) In the next place we must consider that as the cerebrum is the organ of thought, and (acting through

the corpora striata) the organ of voluntary action, so if there are acts in men or *animals* that are purely ideomotor, they must appear to any outside observer *precisely like* voluntary action proceeding from intelligence and choice.

34. I believe that what we call "*instinct*" is merely reflex action, or in other words, that we call reflex action instinctive. Of this there is no doubt in the lower range of what is called instinct. What I wish therefore to assert in this place is that I believe that all those actions which, even in the higher animals as the dog or horse, we have been accustomed to regard as indications of reason, are only instinctive; and I believe them to be reflex actions of the class ideomotor, and consequently that they do not imply either consciousness, reason or will, in any true sense of the words; that they are *like* voluntary actions, does not prove them to be voluntary in the true sense of the word, or that they proceed from intelligence and will at all; for we have seen that any reflex or involuntary action may be so imitated that no observer can distinguish between them.

35. And this is the position we always occupy with regard to animals: We are mere outside observers; they have no language by which we can learn what are the facts of their consciousness, or even so much as whether they have any consciousness at all. I know, for example, that a certain act that I perform is voluntary because I am conscious of the volition that preceded and caused it, and that a certain other act is involuntary because I am conscious of an effort to resist the act and find myself unable to do so; the act is spasmodic and beyond my control. But we have no possible way or means of access to the consciousness of a brute. And in fact we have in this case no proof of consciousness at all or anything more than mere reflex action.

36. Sensation and emotion are in many respects like action and reaction in physical science. *Theoretically* they are equal. But in physics the length of the rebound varies not only with the properties of the substance which is thrown against an other, but also with the character of the substance against which it is thrown. A ball, for example, will rebound much farther when thrown against a marble slab than if thrown against a bale of cotton or a mass of clay. So too the sensibility, susceptibility or reacting power of the granular nerve masses, even when those masses are the same in size, varies with the constitution of the tissue itself. It is less in fish and reptiles than in birds and in animals; it is less in lymphatic persons than in those of a nervous temperament; it is less generally in herbivorous than in carnivorous animals; it is less in men than in women; less in infancy than in youth and adult manhood; and it declines from the maturity of manhood as we pass into the infirmities of old age. Some forms of disease increase it even to the production of delirium or insanity; others diminish it to paralysis and coma. Narcotic and stimulant drugs, as alcohol, tobacco, opium etc., affect it, for the most part increasing it at first, then diminishing it towards insensibility and anæsthesia; and the *habitual* use of them probably never fails to impair the quality of the nervous system, producing either an increased sensibility, what we call irritability or nervousness with loss of the powers of self control, or a diminution of sensibility with loss of mental activity, and indifference to the considerations of morality, of taste, and even of common decency and decorum.

37. And yet emotion is not a mere reaction; for its strength will depend somewhat on the size of the reacting centre, also. With the ganglionic or grey matter

large in the spinal cord, the excito-motor motions will be stronger and more powerful, other things being equal, than if that part of the body is small. Hence not only in human beings as compared with one another, but in animals of one species compared with those of another, we find the three classes of reaction, excito, sensori, and ideo-motor vary with the composition, development and size of the three great centres, spinal cord, sensorium and brain. Hence in order to judge of character we must take the two into account, sensibility and size. If for example, the spinal cord of the elephant had no more reacting power than that of the squirrel, he could not move a foot or raise his proboscis. And yet in proportion to size the spinal cord of the squirrel has by far the most reacting power, having the most sensibility or being the most susceptible and capable of more intense activity from a given cause.

38. Hence the effective force of any nerve centre, spinal cord, olivaria ganglia, cerebellum, sensorium or brain proper, may be regarded as the product of the two varying factors, size and sensibility, multiplied into each other. And we have external indications of both these factors: of the sensibility in the temperament, the brilliancy of the eye, the sharpness and definiteness of outline in the features etc.; and of size in the proportions of the body; the large brain is indicated by the size of the head, and the large spinal cord by the breadth of the body and the development of the thoracic and the abdominal viscera. These comparisons, however, are chiefly valuable when we compare one individual with another of the same species. When we attempt to compare one species with another the difference in the distribution of the nerve masses is apt to mislead us.

39. Now in human psychology just according to these

varying degrees of sensibility, or the reacting power of the nervous centres, does the influence of external objects acting in these three ways—excito, sensori and ideo-motor—become powerful or weak in producing the phenomena of active life—energy of action. And the diversities which we everywhere see in human character, as between children and adults, between men and women, between different men of different forms, sizes, and different temperaments, is largely due to this difference in the sensibility of their nervous centres. So that *in effect* the external objects by which they are surrounded, and the events that occur in their experience, produce a much greater influence or amount of action in some than in others.

40. In human beings, however, there is undoubtedly a sort of sub-contrary or reciprocal relation between the sensibility, or reactive power of the two lower centres on the one hand, and that of the higher, or the brain, on the other; so that what is called mental activity has, of itself, a tendency to diminish the force of excito-motor and sensori-motor emotions. And thus, in an ethical point of view, elevated thought and the occupation of the mind with noble and worthy objects diminish, and, in some cases, totally destroy, the power of temptation over us. But in this case, there seems to be a transference of the sensibility from the spinal cord and the sensorium to the brain, with a diminution of it.

41. It will be obvious that I doubt whether anywhere below man we find intelligence and volition, properly so called. Instinct we do find; but not, as I think, reason. However, this point will receive attention all along our discussion, and much in confirmation of the view I take could not be presented, with any chance of being appreciated, at this stage of our progress.

But we have seen enough to know that men and animals, while living, with a mere nervous system and without mind at all, would be active beings and perform many, at least, of the actions which they now perform, and in a manner so nearly like the present that no mere outside observer could distinguish them one from another.

42. The first consequence of this view is that many of the facts and phenomena of psychology which have hitherto been considered as belonging to *mental* science do not belong to it at all. They are purely physiological. Precisely how far this may go, we cannot now determine. But it certainly extends to many of the acts of the body; it extends to much of speech. Without mind at all, as I shall show further on, there could be no words in any language, except mere proper names of things. By the exercise of mind proper, nouns become generalized; other parts of speech come into use, and sentences are formed, which represent the things we think of in the relations which they appear to sustain to one another. And *after such a language has been formed*, its acquisition and use, to some extent, may become a mere matter of sensori-motor and ideo-motor activity of the olivary bodies and the vocal organs. This assertion is proved, in general, by the phenomenon, so often occurring, of words being used by children and others without any idea or appreciation of their meaning. If a word has been used in expression of admiration or other benevolent emotion, the child will repeat it towards its mother, its nurse, its doll, etc., even though the *meaning* of the word is ever so far from expressing admiration or being complimentary in its ordinary use. The very common use of two negatives in the same sentence, as "he didn't do nothing," is a case in point. A moment's

comprehension of the force of the words would lead to the omission of one of the negatives ; but the words proceed from emotion or feeling rather than thought.

43. Words have a two-fold relation to reflex emotion, or rather to emotions of two classes, sensori-motor and ideo-motor.

(1) By their mere sound and the tone of the voice, words affect the sensory organs, and thus produce an effect upon us, even when there is no comprehension of their meaning, and this is in fact the case with all mere music. Words expressive of anger, hate, love, hope, sorrow, etc., etc., affect us when we do not know their meaning and even when they belong to a dialect that we never before heard.

(2) And undoubtedly many words and sentences which originated in the highest thought, produce an ideo-motor effect in those who hear them when there is no corresponding thought in the mind of the hearer. But, in general, the mere sound of a word that we are familiar with will occasion all the emotions, though perhaps not quite so intensely, as the sight of the thing itself which the word denotes.

44. And thus man wields over his fellow man almost if not quite, all the influences that nature itself, with all its endless variety of objects, can wield, by the mere use of the names which denote those objects. It is as if the wisdom of the ages past and the influence of all things at present existing were flowing into us and through us, as a channel, into the minds of those whom we help to educate.

LECTURE III.

NATURE AND REALITY OF MIND.

1. We have thus far been occupied chiefly with the consideration of the body as an organ of the mind ; and, although we have gone a very little way into the details of its structure and functions, we have seen that it is a most delicate and most complicated piece of mechanism. But the body is a machine, and a machine only. As mere matter it could be no more ; and therefore, it as truly and as necessarily implies a moving force or power, out of and distinct from itself, as any other piece of mechanism. What, and of what nature is this moving force ?

2. The materialists answer that it is the objects of the outward world acting upon its nervous centres through the nervous tissues and the sensory or afferent nerves. That objects in the world around us do so act upon us is a fact that admits of no doubt. The entire phenomenon of reflex actions, which we have just been considering, whether having its origin in the spinal cord, the ganglia of the sensorium or the hemispheres of the brain, is undoubtedly of this character. These causes of action are ever with us, around us, in us and acting upon us ; and never, for a single moment, from the cradle to the grave,

—nay, from long before we are placed in the cradle—do they cease to act upon us. They act upon us, producing sensations; and these sensations may take either of two directions and forms, already spoken of, and for the most part, they take both at the same time—they may pass back from the ganglion in which the sensory nerve terminates along the motor fibres, as causes of muscular contraction, and so of action; or they may pass to the sensory ganglia at the base of the brain, where perception and imagination take place; and they may also extend from the ganglia up to the hemispheres where we have the more abstract processes of thought.

3. But when they reach the sensorium and the brain, what is it that perceives and thinks and reasons? Can mere matter think? Doubtless the sensory ganglia and the brain itself, as I have all along been saying, are the instruments and organs of thought, and in one sense, regarded as instrumental causes, they may be said to perceive and think. But they are mere instruments, and one might as well speak of his pen as writing his letters as of his brain as doing his thinking for him. The analogy is a close one, and the brain thinks in the same sense as the pen writes—as an instrument and nothing more. And as there must be a hand to guide and move the pen, so there must be something to move and guide the hand. And if we say that that which moves, guides and controls the brain in its thinking is the outward world, we say what indeed is true to a certain extent, but it is not the whole truth. It explains only reflex actions.

4. In order to proceed any further and speak of the nature and reality of mind, we must recognise consciousness as a means of knowledge. What has thus far been said, rests upon the physical method of investigation;

that is, the method of investigating by means of the external organs, the eye, the hand, etc., just as we investigate the facts and phenomena of the material world. But besides this, we have another means of knowledge for matters of the kind now under consideration. Each one of these facts or phenomena has two sides or phases, an outer and an inner one; the outer phase seen by the eye, and as well by an other person as by ourselves, while the inner one is seen by ourselves, and those of each person by himself alone, by what we call consciousness. That is, while other persons can see the acts that I perform as well as myself, I am conscious of thoughts and feelings, purposes and aims in the performance of these acts which no one but myself, can see or know, except as I disclose them by the use of language expressive of my thoughts.

5. I have thus spoken of consciousness as a means of knowing the states and conditions of the mind. The word is also used to denote that knowledge itself. And it is sometimes used in a still different sense, to denote a supposed place in which the phenomena occur, as when we speak of something as "a fact of consciousness," or as having "occurred in consciousness;" by which we mean only that the fact or phenomenon is one of which we were conscious at the time it occurred. The first of these senses, namely, that which regards consciousness as an abstract term, like perception, imagination, insight etc., used to denote a class of mental acts, is the strictly correct one. The other by which it is used by metonymy to denote a supposed faculty or agent that performs the acts, and finally (by some other figure not so well understood and which, perhaps, has no name) to denote a supposed place in which the phenomena are considered as having taken place, are secondary and derivative senses.

6. Consciousness sustains about the same relation to the mind itself that sense-perception does to the outward world. That we perceive is a fact of sense-perception; that we know that we perceive is a fact of consciousness, and is equivalent to the assertion that we are conscious of perceiving. And as we have an insight into the nature of the object we perceive by means of the organs of sense, so also we have an insight into the nature of the acts of consciousness—the acts of the mind of which we are conscious. Hence we can analyze them, classify them, reason about them, and a psychology becomes possible.

7. It was, however, customary of late for physiologists of a certain school to deny the fact of consciousness as a means of knowledge. Thus, Comte* says, “as for the fundamental principle of *interior observation*, it would certainly be superfluous to add anything to what I have said already about the absurdity of the supposition of a man’s seeing himself think.” And Herbert Spencer says,† “It may be readily shown that a cognition of self properly so called is absolutely negatived by the laws of thought.” And this he attempts to prove on the ground of what he says all philosophers call “the fundamental condition of all consciousness, the antithesis of subject and object.” “The mental act,” continues the same author, “in which self is known, implies, like any other mental act, a perceiving subject and a perceived object. If the object perceived is self what is the subject that perceives it, or if it be the true self that thinks, what other self is it that is thought of?”

8. Reasoning, or rather the result of reasoning, even

* Martineau’s Ed. Vol. I, p. 461

† “*First Principles* (Appleton’s Ed.), p. 65.

when this reasoning is considered a demonstration must yield to facts, since no conclusion can be more certain than its premises. One of the premises of any process of reasoning that attempts to prove or disprove a *fact* must be itself an observed fact. Now, nothing is more certain than the fact that we know that we think. Even perception is no means of knowledge except as we are conscious of perceiving. It is indeed true that we may, as for the most part we do, give but very little attention to the act of perceiving—the attention being mostly occupied with the object perceived. But suppose an act of perception without consciousness of it: how do I know that any object before me exists, the pen I am writing with or the paper I am writing upon, for example? Manifestly because and only because I perceive them. But suppose I perceive an object without knowing that I perceive it, or (which is the same thing) perceive the object without being conscious of perceiving it? Perception would be no means of knowledge, just as sensation, until it enters consciousness, is no means of perception. If, then, we could perceive an object without knowing that we perceive it, we could not, by perception, know that there is any object perceived. To deny that consciousness is a means of knowledge, is, therefore, to deny both the reality and the possibility of knowledge.

9. It is not easy to decide precisely where, in the ascending order of life, we first find mind and mental phenomena as distinct from purely physiological manifestations of sensation and emotion. It is common to speak of animals as thinking, reasoning, willing, etc., and if these acts imply mind (and if they do not, nothing that man performs does imply it), then those who ascribe these acts to animals, ascribe to them, by necessary implication, mind also.

But I doubt if we find proof of mind anywhere below man. Sensibility, of course, does not prove the presence and reality of mind ; since this may exist after death even, and does exist in plants. It exists even in inorganic matter. Iron is susceptible or *sensible* to magnetism, and if we watch the motions of the magnetic needle, we are apt to be impressed with the thought that it *knows* where the magnet is and when it is near. Reflection only, corrects the notion of intelligence in the needle. And we may begin with the sensibility of atoms and molecules of matter to heat, light, electricity, etc., and ascend up, meeting at every advancing step, new and varied forms of susceptibility, until we find in animals special organs of sense, as the eye, the ear, which, however, only render them susceptible to properties of objects, as colors, sounds, odors, etc., of which they otherwise would have known nothing, and without which these objects could have exerted no influence upon them.

10. But in man, we manifestly find something higher than, and different from, all this—something that is not merely reflex action, something that is spontaneous and voluntary.

Take as an illustration and proof of this point, the case of an electric shock. Here the electric machine is the cause alike of the sensation we feel and of the contraction of the muscles which produce the jerking motion of the hand and arm that ensues. Of the cause of the motion in this case there can be no doubt. Nor is even so much as the pain or sensation at all necessary to the production of the motion in the limb. But without the presence or agency of this external cause, one can produce just the same contraction of the muscles, and the same consequent motion of the arm. In other

words, we can imitate the reflex action which was caused by the electric machine. But what is that which is the cause of the muscular contraction and the action in this case? Clearly it was something internal.

11. Now, to the causes in the external world, the objects that are distinct from ourselves, acting as above explained, we must add physical causes within the body also, operating by excito-motor emotions. Of this kind we have examples in cases of unrest and disease. One may be in such pain that he cannot be still. His disquiet may take the form of weeping, groaning, shrieking or of violent movements of the whole body. There are ten thousand forms and causes of irritability within the body itself which will produce motion of one kind or another, and in some one or another of the organs or limbs of the body. Of this kind are Corea, or St. Vitus' dance, Epilepsy and in fact all the various forms of involuntary or spasmodic actions. And when we have the cause of the kind of action in the brain or nerve centres, we, for the most part, call it insanity. If it occurs in the functions of the optic nerve and its appendages, we have what we call false perception, and the belief that we see something when there is nothing to be seen, or that we see things as we know that they are not.

12. But in all these cases, the brain and nerve centres act as matter and in accordance with the laws of matter. They act as if they were acted upon either *mechanically* as in the case of an external object, or *chemically*, as in the cases of the involuntary acts referred to. The diseased activity is the result of some change going on in the organ—a change which organic chemistry could doubtless explain to us if we only had the means of investigating it; just as in the case of a piece of zinc dropped into a powerful acid, the substance grows warm and be-

gins to boil with a very active state of commotion. But all these actions are involuntary. We have no control over them. We can in many cases imitate them, and produce muscular motions like them. But we can neither prevent nor wholly control them.

13. Manifestly, therefore, there is another class of phenomena, different from either of these two. Now the very fact that we are conscious of sometimes attempting to resist these motions proves that the "I" or "we" that attempt the resistance is a reality—a substance—a cause, as truly as the phenomena of the action itself, proves the reality of the external object whose influence we have to resist. It, and the "we" or the "ego" within, are opposing and counteracting forces. And to be counteracting forces one must be as real and substantial as the other, however unlike they may be in all their properties.

14. But, to return to the specific case of the imitation of the motion produced by the electric machine. Where does this effort at imitation originate? What is its cause? Doubtless it originates *in* the brain as an instrumental cause and not in anything external to the body, as the motion which we are attempting to imitate. But why does the brain act now and in this particular way? If the brain is mere matter, it can act only as it is acted upon, either (1) mechanically, by something without or (2) chemically, by some change going on within itself. The former condition is precluded by the hypothesis in the case. We are speaking of the act that takes place without the electric machine or other external cause of a similar kind. And if we admit, as certainly we do, that there is a chemical change going on with the action of the brain in which the act of attempting to imitate the involuntary or reflex action has its origin,

yet the question recurs, what caused that action and that change? Does the chemical change cause the volition, the attempt to imitate? or does the volition—the attempt at imitation—cause the chemical action? It is like a case of combustion, does the combustion cause the heat, or the heat cause the combustion?

15. If we say that the chemical change causes the volition, and so through it the attempt at imitation, then the act is no longer voluntary. The volition is no longer voluntary, and we have no more control over the attempt than we have over any action of the other kinds just spoken of. But this is not in accordance with experience or with the testimony of consciousness. If we know by any means that there is a sensation in the one case produced by something external and preceding the acts, or an uneasiness and diseased activity which we cannot control, producing results which we cannot prevent; so in the other case, we know by the same faculty, consciousness and by a mental act precisely the same in kind, that there is a something within which we call “I,” “myself” or “the mind” that acts upon the brain, and through it upon the muscles to produce the action that ensues, and which therefore, we regard as voluntary. The cause must be as real and substantial in the one case as in the other. In the one case it is the electrical machine. In the other, it is, what is it?

16. This question we can answer only by enumerating and describing its essential properties.

(1) And first, we know it as *agent* or *cause*. It was the cause of the effort or attempt at producing an act like that which had been produced by the electric machine, acting externally upon the sensory tissue and (by means of the afferent nerves) upon the nerve centres. But the spontaneous cause within the machine (which

the brain and nervous system constitute) acted upon the brain and produced in the spinal cord precisely the same condition as an antecedent and cause of the muscular contraction as the electric machine, acting from without and on the sensory tissue had previously produced. And we have precisely the same kind of proof of the reality and substantial existence of the cause in the one case as in the other, namely, the testimony of consciousness. In the one case, we are conscious of a sensation and perception, and, in the other, of a volition.

(2) And not only is it a cause, it is *spontaneous* cause. The electric machine did not turn itself; it acted only as it was acted upon. It gave the shock only as somebody moved it, and made the requisite contraction. And so it would have been if instead of being operated immediately by a human hand, it had been in connection with a congeries of wheels, pulleys and other elements of machinery never so complicated, and extending through never so many links. No one of them could move except as they were moved, or act except as they were acted upon. And, how far soever, we might have occasion to trace the series back, we should, at last, come to some cause acting under a different law—some spontaneous agent who could act without being acted upon, move without being moved by anything out of or antecedent to itself.

17. And to precisely such an agent do we come in the other direction. From the contracting muscle and jerking arm, we pass up the efferent nerves to the spinal cord and up that through the sensory ganglia to the hemispheres, and here the chain of secondary or instrumental causes ceases. All of these act as they are acted upon, move as they are moved. But there must be something to move the brain in order that it may set in motion this chain of causes

or instruments, intervening between it and the motion of the arm. And if there were a *material* agent acting upon the brain, we should be obliged to look beyond it to find an agent or cause that is not material and inert—which is not subject to and does not obey the law of acting only as it is acted upon—something which is not a mere channel or means of transmitting efficiency, but which is spontaneous, and in itself an original cause of efficiency. And this we call the “ego,” “the mind,” “the self;” and we regard it as constituting the selfhood, the individuality and personality of man.

18. In the second place, we know it as thinking substance. To be sensible, or have sensation, is one thing, and to perceive or think is another. The former is a state that implies no activity, but only passivity or susceptibility of being acted upon. It implies, indeed, the reality of that which is sensible or in the state of sensation. And it implies a cause or an agent that produced the state. But the form of expression does not imply any activity or agency in the grammatical subject of the verb. In sensation and sensibility we are acted upon.

It is otherwise, however, in perception. To perceive implies action, and the act implies an agent that performs it. We do not ascribe our sensations to ourselves as their cause; but rather to the external objects which by means of them we perceive. Perception we regard as a personal act. It is something that we do; it is an act that we perform. But this “we” is self, the mind, which acts as spontaneous cause in all our voluntary acts. In perception, however, as we shall see more fully by-and-by it acts under necessity; it cannot but act when acted upon in sensation, nor can it act otherwise than it does and see things white that are black, those that are round to be rectangular, etc. Otherwise there would be no cer-

tainty in knowledge, no ground for confidence in our most invincible convictions. But still it is nevertheless the mind that perceives, and is the active agent in that kind of mental activity.

19. And we might go on with a similar train of remarks with regard to any other mental act or class of actions, and show by a similar kind of reasoning that it is the mind that thinks—that acts in all cases of imagination, of insight, of reasoning, of memory, etc., and thus prove that the mind is a thinking reality. And in calling it a substance, as I have done, I do not intend to imply that it has form and color, extension and solidity; but only that it is not a mere property or abstraction, a mere phenomenon. I intend to imply that it is an abiding and enduring thing, that may be substantial though we see it not, and real even when not in action.

20. Of its properties, in the strict and narrow sense of the word, we know, indeed, nothing. We know it as a cause and as an agent; and by the necessity of the laws of thought, we call it a substance because it is a cause and an agent. That which is not and has no ontological reality can do nothing and can produce no effect. A mere property, mode, state, or affection is no agent or cause. That which acts, in the true and proper sense of the word, must be, in order to act; it must be a substance and a reality in order to be a cause or an agent. We know that it perceives, imagines, thinks, reasons, remembers, etc., and we know that it is spontaneous. All but the last named, are acts or forms of activity; the latter alone—spontaneity—may be called a property. And being a property which is not only different from, but contradictory to, and incompatible with, inertia (which is an essential property of matter) it distinguishes

mind from matter as something essentially different from it and from all merely material objects. It sits inside of this complicated machinery of brain, ganglia and nerves, and through them sends its messages outward, and acts upon the objects in the outward world as they, in their turn, send their messages in through the same machinery, and act upon it. The two stand over against each other, both equally real, though essentially unlike.

21. And there is no escape from this conclusion unless we go back upon our definition of matter and deny its inertia. This we may indeed do, in terms, as many philosophers have done. But then, we must not allow ourselves to be deceived or misled by mere words. What do these men mean by denying the inertia of matter? Do they mean to assert nothing more than that all matter and all material objects are in a state of motion and of change? If not, their denial does not affect our argument; for we hold (and surely they do not intend to deny) that all this change and motion whether mechanical and among masses, or chemical and among the particles and molecules of the masses, whether molar or molecular, is subject and obedient to the law of action and reaction, the law that nothing moves, in the material world, at least, except as it is moved, or, in short, that all action, all motion, all change in the material world obeys what is recognized as the first law of motion, namely, that any object whether molecule or mass will remain in whatever state it may be until acted upon by something outside of and distinct from itself.

22. And this we call the inertia of bodies. It lies at the foundation of all natural science—every principle of chemistry, of mechanics and of astronomy alike. Its discovery and assertion was the first step in the advance of physical science. It lays at the foundation, and is the

corner stone of its structure. Deny it, and all science is at loose ends; not a principle can be asserted, not a law can be depended upon, not a result of the causes now in operation, or hereafter to be in operation, can be looked forward to with any more confidence than we can now anticipate the acts of the wayward child or the doings of a senseless, purposeless idiot.

23. Now surely, these philosophers in denying the inertia of matter, do not intend, by their denial, to involve all these consequences. They do not intend to upset the foundations of science, contradict or controvert its axioms, and involve all its doctrines in a shroud of uncertainty. But they intend to controvert the notion that a single particle of matter is ever—within the range of our knowledge, at least—at rest or without exerting some influence, as by gravity, affinity, cohesion, repulsion, etc., upon other particles of matter; so that of them all, it may be said, they are all in action, in motion, in a state of change. And this leaves to matter that property which I have called inertia, and on which I have based my assertion that mind being spontaneous rather than inert is essentially different from matter.

24. I am, of course, aware of the difference between mechanical and mere chemical action. But the difference is of no importance to the present argument. If we see a mass at rest and start from rest into a state of motion, the motion is mechanical, and we look for a cause or force outside of the moving mass as the cause of the change of condition. Chemical action results rather in a change of the properties of that which is acted upon than in motion or a change of place. It may be produced by affinity, heat, electricity, etc. But suppose two substances as carbon and iron in contact, and as having been so for a long time with no chemical action going

on. Then suppose chemical action to begin, the two uniting and forming carbonate or carburet of iron. This *beginning* of the chemical action, this change from a state of chemical inactivity to one of activity between the two substances, would require a cause—the intervention of some third agent—no less than the commencement of mechanical action—which is motion—in separate masses. The cause of the commencement of the action might be a change of temperature. It might be electricity. But the very fact of the beginning would imply the presence and agency of some third substance acting by means of some of the chemical agents, heat, light, etc.

25. Another important phenomenon should be considered. The forces whether chemical or mechanical act with a constant intensity. The earth attracts the moon with an invariable force. Nor has it any power to increase or diminish that force. The affinity of iron for oxygen, carbon, etc. is constant and always the same in its intensity, provided the circumstances of temperature, etc. are the same. Iron cannot increase or diminish its affinity for carbon or sulphur. But it is not so with man. I can put forth much or little force of will or of thought as I please. If I wish to lift a small object, I put forth but little effort or strength. If I think, or find the object heavy, I put forth more strength, that is, I can increase or diminish the force or effort, or cease to make the effort altogether. Now, if any *material* cause or agent could do this, there could be no physical science whatever. We should never know with what intensity any force would act in any particular case, and therefore, we never could foresee or calculate the results.

26. And yet the result of our inquiries must depend upon a definition. If matter be always, and under all

circumstances, inert, in the two accepted senses of inertia, mechanical and chemical, then beyond further question there is something *in man* that is not matter; and we may as well call it mind. But if matter may sometimes act spontaneously, in the sense in which we have used the word spontaneity, then we have no proof from psychology, or any other source that I know of, of the reality of mind. If a mere mass of matter may act spontaneously, it may, for aught we know, think and perform all the functions we ascribe to mind.*

27. What we thus know as mind is a simple, incomplex, uncompounded reality. There is nothing in the means by which we know either that it is, or *what* it is, that should lead us to ascribe to it a single material or sensible property, as size, form, color, extension, etc., etc. Nor is there anything that can justify us in speaking of it as made up of parts, organs or faculties. The *organs of the mind* are really *parts of the body*, as the brain is the organ of thought, the eye the organ of sight, etc,

28. But the "faculties," as they are called, are quite a different matter. The term was at first concrete, and

* This alternative is not only obvious, it has been foreseen. Thus MAUDSLEY, "*Body and Mind*," Am. Ed., p. 108, to avoid the argument in favor of mind from this source, says: "Matter really rises in dignity from physical matter, in which physical properties exist, to chemical matter and forces, and from chemical matter to living matter and its modes and forces, * * * and lastly through the different kinds of nerve cells and their energies to the most exalted agents of mental function." P. 109: "Matter rises in dignity and function until its energies merge insensibly into functions which are described as mental." If these men choose to ascribe spontaneity to matter, it is their affair and not mine. I am content to leave them to arrange that among themselves. I shall, however, expect that they will tell us where inertia ends and spontaneity begins; and with the latter, we metaphysicians will content ourselves, and will ask to be permitted to call it "mind."

denoted the person or persons that did something, as the Faculty of a University. Then it came to be used as an abstract term to denote the power or ability to do something. Hence in this view, the fact that the mind remembers, imagines, etc., is proof that it has the faculty of imagining, remembering, etc., these faculties come to be called by the name, imagination, reason, memory, etc. The article "the" was used before these words as "the imagination," "the memory," "the reason," etc., and the objectification was complete. Men had passed from regarding "imagination" as denoting a class of mental acts or rather a kind or form of mental activity to regarding it as a substantial part of the mind itself.

29. That man walks proves, indeed, that he can walk, or (if we prefer so to express it) that he has a faculty of walking. And in walking, the feet are regarded as organs or instruments. But then the feet are seen and observed to be used in the process. In the case of breathing however, the process is long performed before we know that we have lungs as organs of respiration. But in imagination, or in imagining rather, we have no proof whatever that the mind has anything with which it imagines, as the body has feet with which it walks or lungs with which it breathes, any more than in the case of the earth's attraction, we have proof of anything distinct from itself by which it attracts the moon. Hence such expressions as "the imagination," "the reason," etc. must be understood as merely convenient expressions for denoting "the mind imagining," "the mind reasoning," etc.

30. I have referred to the difference between "perceiving" and "knowing that we perceive" as furnishing a proof of the reality of mind. I consider the argument unanswerable, and I also look upon the effort to discredit

consciousness as an undesigned confession that if we admit the reality of consciousness, we cannot deny the reality of a mind as something besides and more than mere matter or a material organization. Of course, no fact is more obvious and undeniable than the propositions, (1) we know that we perceive, and (2) without knowing that we perceive an object, we should not know by perception that the object itself exists. Hence, without consciousness of knowing, there is no knowledge of anything. Mere instinct there may be, but no knowledge.

31. It is common to speak of being conscious of perceiving, remembering, etc., as though these mere *acts* were the object of consciousness. Now, "to be conscious" is merely an intransitive verb, but with the preposition "of" after it, as "to be conscious of," it becomes transitive, and hence "to be conscious of perceiving" must be an elliptical expression from which the noun that the verbal adjective "perceiving" qualifies has been dropped out. The noun, in this case, can be nothing else than self. Hence, "to be conscious of perceiving" is the same as "to be conscious of self or mind (in the act of) perceiving," and we have "self" or mind as the real object of consciousness, or as that of which we are directly conscious.

32. Hence all consciousness is really self-consciousness in one sense, and there is no difference, in kind, between the two. The only difference, in fact, is this. In most cases, the entire thought is occupied with the object of thought. Thus, if in perceiving any object, our attention is chiefly occupied with the object so that we think of that only, and scarcely at all of self, then we call it simply consciousness. But in other cases, our attention is chiefly directed to self, and this we call self-

consciousness. And thus we see that consciousness is a form of mental activity that concurs and co-exists with others and never does or can exist alone. In order to be conscious of self even, I must be doing something, perceiving, thinking, willing, suffering, etc., and just in proportion as we direct attention, or as thought is directed, to that about which the thought is occupied (object) or that which thinks (subject) do we call it consciousness simply, or self-consciousness.

33. In case the organs are healthy and in their normal activity, we seldom think, or are conscious, of the sensations which external objects produce, and by means of which they are perceived. But when the organ is diseased, or for any reason, the sensation becomes painful, attention is directed to, and thought is occupied with the organ of perception. If the eyes are sore, we think of them, and of ourselves whenever we perceive anything. And, in fact, the sensations may become so intense that we almost if not entirely fail to perceive the object at all. So with consciousness. If the emotion occasioned by an object, or the circumstances in which we are placed, are unusual or at all intense, they arrest or occupy thought—make us think of ourselves—we become “embarrassed,” as the expression is—unable to direct our thoughts or to control our faculties, and of course, we fail to do anything.

34. Sir William Hamilton has proposed a definition of consciousness that differs materially from the one I have just given. He makes the object of consciousness not the mere act of thinking alone, but the object of thought as well.* “To maintain,” says he, “that we are conscious of the act of perceiving and not of the object per-

* Appleton's Ed., p. 31 and 173.

ceived seems to be suicidal." The remark discloses his motive. He is anxious to get some ground for affirming the substantial reality of the objects of the external world. And I readily admit (for it cannot be denied) that the *act* of perception *implies* the substantial reality of the object perceived, but I cannot admit that we are, strictly speaking, conscious of the object perceived.

(1) It is a departure from the accepted use of the term.

(2) It ignores the difference between two classes of acts which are different, and should be kept distinct in our discussions, and

(3) It fails to accomplish his object; for if the object perceived is an object of consciousness as much as the act itself, we have no means of discriminating between false perception and true, and the objects we think of in our dreams and in the hallucinations of delirium, are as real as those we perceive in our waking hours, or at least are proved to be real by precisely the same grounds of belief in the one case as in the other.

35. This, however, is not all. A noun following the preposition "of," in English may always be made an adjective qualifying the noun that precedes it; thus "houses of wood," "wooden houses," "goddess born of the sea," "sea-born goddess," etc. If now I am conscious of hardness, we have "I am consciously hard," or "I am hard," and the property which I had supposed to belong to something else, is really a property or mode of myself. Hence neither consciousness nor perception, on this theory, is any means of knowing that there are objects around us in the world, or objects existing anywhere, except ourselves alone. Huxley, while accepting Hamilton's theory, has admitted the inevitableness of this result.*

* "Lay Sermons." Appleton's Edition, p. 325.

36. It is not easy to say what is the organ of consciousness, or whether it has a separate organ or not. On this last question, I am decidedly of the opinion that it has no separate organ, as the eye is a separate organ for seeing, the ear for hearing, etc. And for this opinion I need at present no other proof than the fact already alluded to, namely, that we are never conscious except when some other form of mental activity is going on also. If we are perceiving, we may be conscious of perceiving, if we are imagining, remembering, reasoning, etc., we may be conscious of these acts, but we are never conscious without some one of them. Hence I infer that there is no separate organ for this class of mental functions.

37. But in regard to the organ itself, the case is not so clear. It is generally held that it is the brain proper, or the hemispheres. In support of this view facts are adduced like the following: It will often happen that we leave off a train of thought perplexed and unable to exactly comprehend something we had been striving after, and on returning to the subject everything seems clear, as clear as if we had gone over it and through it until we had become entirely familiar with the process. It will often happen also, that after sleeping, we awake with a clearness of insight and comprehension that seems to imply a large amount of mental action during the sleeping hours of which we have no consciousness or recollection. And in some cases, we actually "*dream out*," as the expression is, what we could not see through before we went to sleep.

38. That we thus *appear* to arrive at results without consciousness of the process admits of no doubt. But I think we can hardly infer with perfect safety that they are *really* "results," and imply the processes supposed. We know, in fact, but little comparatively of the change

that actually take place in the condition of the organs of thought that correspond to the changes in the thought itself. From what we know, however, we can hardly doubt any longer that there is a peculiar condition of the nerve cells for each thought or mental act, so that although the two have no resemblance to one another, yet the relation between them is constant and invariable to such an extent that the one never occurs without the other,* just as there is no resemblance between the words, "and," "pen," etc., etc., as written on the page and the articulate sound which we utter when we see them, and yet the relation is constant so that we always make the same sound for any given word.

39. If this be the case, as is most probable, we see at once that we cannot infer, in the cases referred to, that the processes supposed to have preceded what we regarded as a result actually occurred. It may be readily admitted that in such cases, the process does ordinarily occur. But it is also quite possible that the state of the nerve cells may be reached without the process in some cases. And of this we have some examples in the experience of all men. In moments of intense intellectual activity, we often see at a glance what can be reached and comprehended at other times and under other circumstances, if at all, only after a long process of thought.

40. These obscure cases raise the question of the comprehension of consciousness, or in other words, whether any *mental* act that is truly such, ever occurs without consciousness of it. How shall we prove that it does ?

* MAUDSLEY cites a Mr. Baird for the following : "He found that when he had put the features or the limbs of patients in a state of hypnotism into a position expressive of a particular emotion, thereupon, the emotion was actually felt by the patient who began to act as if he was under its influence." "*Body and Mind*," p. 33.

Only, I apprehend, by assuming that the act is a result that *implies* other acts that we have no recollection of; that, therefore, most likely, we had no consciousness of them when they occurred. I shall admit presently that recollection of any mental act after it has occurred, implies a consciousness of the act when it occurred; or that we cannot recollect what we were not conscious of at the time of its occurrence. Now it is certain that some acts imply *logically*, as logical antecedents, others, as judgment, imply analysis and abstraction, etc. But a conclusion, that is, a proposition that is regarded as a conclusion, does not necessarily imply the process of reasoning by which that proposition *as a conclusion* is ordinarily verified; for the proposition may be the result of immediate insight. To the Infinite Mind no process of thought or reasoning is necessary—all is insight.

41. If the organ of consciousness be in the sensorium, as is not at all improbable, it is certainly possible that there may be thought, or activity of the hemispheres, without consciousness. And if, on the other hand, the hemispheres be the organ of consciousness, we may have perception without consciousness. True, it would not be a means of knowledge; for we should not know that we had perceived, and of course, therefore, should not know the object perceived, and in that case, I think the act would be reduced to a mere reflex action of the sensori-motor class. It would be virtually a sensation reaching the sensorium, and then being reflected thence as an emotion without consciousness of it.

42. I am, however, inclined to think that no mental act occurs without consciousness. As already said, consciousness is only a concurrent act occurring with some other, in such wise that attention may be given for the moment chiefly to either one or the other, that is, either

the act we are performing or the object of which we are thinking. And that with which we were chiefly occupied, or, in other words, that to which we chiefly directed attention at the time, will be the one that is chiefly remembered, while the other may be entirely forgotten. It is, in fact the doctrine of Hegel and other Germans that we are never conscious of a mental act the first time we perform it; but on performing it the second time, we can watch ourselves in the very act. But this statement is in harmony with what I have said. At first we are so much occupied with *the doing* of the act that we have no time to think of ourselves, and see how we do it; but having acquired some degree of facility in the performance of it, we become able to do it and think how we do it at the same time.

43. But leaving uncertain speculations aside, it is manifest that the more self-conscious we are in the performance of any act, the less of force and efficiency we can bring to the performance of that act. And consequently in the most intense mental activity, we become, as the expression is, "*absorbed* in our subject," "forget self." And commonly, whatever tends to make us think of ourselves or to self-consciousness does by just so much, detract from the measure of intellectual power, we can bring to the performance of any task until we become so much absorbed in thinking of ourselves that we can think of nothing else—we become embarrassed and make total failure.

It must be carefully considered that the testimony of consciousness is to the mere fact of a mental state, not to its name or any theory of it. The confounding these different things is the source of all our mistakes in our opinions of ourselves. One is conscious of a feeling—mistakes its name or character and so misjudges himself,

thinking that he is very humble, perhaps, when he is only self-conceited and proud.

44. In this way we must account for those extraordinary cases of fanaticism which occur under all forms of religion, the Christian no less than heathen. One is conscious of very deep and earnest feelings. Some one else in whom he has confidence or under whose influence his thoughts are at the time, calls it religion. He accepts the name, and calls it so, too. Some one else supplies a theory and ascribes it to Brahm, Buddha, Apollo, Manitou or some other superhuman agent, and the patient affirms all, the fact, the name and the theory, alike to have been a matter of experience.

45. One inference more. Consciousness is no safe measure of power. The strong man is not conscious of his strength. He accomplishes great results without much effort and consequently *he* thinks them easy, and not that *he* is strong, and they are so *for him*. But the feeble man, in order to accomplish what is only an ordinary task, is obliged to put forth much effort, perhaps *all* his power, and he is apt to measure the result—and estimate his own strength, too—by the amount of effort which he is conscious of having made; whereas, effort is generally inversely as the strength itself, as the most of it is needed, for any particular task, where the total of strength is least.

LECTURE IV.

SENSE-PERCEPTION.

Having completed our survey of sensation in its relation to emotion and having considered the reason for believing that in man, at least, there is something besides the nervous system—something immaterial which is excited by the sensations produced by external objects to acts of perception and thought, we will return to the consideration of sensation again, and study them now with reference to perception and other mental acts.

1. Any sensation in order to be a means of perception and knowledge must have been recently produced ; and any state of the sensory tissue and of the nerves leading from it which is not inconsistent with the organic integrity of the tissue, soon ceases to be matter of consciousness. Thus the air which is at all times in contact with the Schneiderian membrane of the nose is not perceived to have any odor. And yet, doubtless, if we could go from breathing something entirely unlike the atmospheric air into the air, we should perceive it by its odor as readily as we now perceive other gases when they are in the air. Persons who habitually wear a ring on one of their fingers, or spectacles on their nose, soon get accustomed to these objects and cease to feel their pres-

ence. We do not ordinarily feel the clothes that we wear on our bodies. We become accustomed to the taste of the saliva in the mouth, even when very acrid, as in the case of those who chew tobacco, and so cease to taste it at all.

2. The following experiment is illustrative on this point. Let a person put one hand into cold water and the other into warm water, and if they are moderately warm and cold, respectively, he will soon cease to feel them at all. But let him take both hands out and put them in water that is mid way, in point of temperature, between the two and it will feel cold to the one and warm to the other, and will soon cease to feel either cold or warm to each hand alike.

3. This fact is of great importance in investigating the laws and conditions of sense-perception. It teaches us that we may soon become accustomed to the presence of almost any object so as to cease to be conscious of its presence. Hence unless we have a succession of objects or successive changes in the same object as a condition of perception—or consciousness of the sensation—no such perception or consciousness will occur. And the only limit that there seems to be to this law is the case in which the object is producing some lesion or structural injury to the organ itself, and is thus, in fact, constantly producing new conditions of the tissue.

4. For this reason it is that in health and while all the internal organs of our bodies are performing their functions faithfully and healthfully, we have no pain, no consciousness of what is going on within us. But let any organ become diseased or perform its functions irregularly and imperfectly, and we have at once a sensation of which we are conscious, and which is very likely to be painful. And this sensation may become a means

by which we can discern what is the condition of our bodily organs. It constitutes "the symptoms" by which the physician judges, or as the profession designate the process "*diagnose*" the disease. And often it happens that the disease comes on slowly, or rests after having attained a certain stage so that in either case alike, we are not aware of it.

5. Hence, consciousness of sensation—or sensation as matter of consciousness—comes only with change; and the fact that no sensation has made known the presence of an object to us or the existence of disease within us, is no conclusive proof that there is no such object or disease. It only proves that the object has always been as it, or changed so slowly that the system gets accustomed to the changes as fast as they occur. For thousands of years, the human race had no idea of an atmosphere that was always around them. They knew of a wind when it was blowing, but of an atmosphere when there was no wind, they had not thought.

6. And if any condition of the nervous system continues too long, we cease to be conscious of it, so, on the other hand, there is a limit, also, to the frequency with which the changes may take place and produce distinguishable sensations. Thus, if one looks at the wheel of a carriage in motion, so long as it moves slowly he can discriminate each of the spokes as they pass by the point on which his eye is fixed. But let the revolutions increase in rapidity beyond a certain limit, and he will cease to be able to distinguish the spokes, and finally their passage across his field of vision will come to be one continuous and unbroken sheen. So with the ear, sounds can be distinguished unless they occur with too short an interval, and then they become blended into one continuous noise.

7. The precise limit to the frequency with which distinct sensations may be made is a matter that can be ascertained only by experiment. I have not taken the trouble to make experiments for this purpose; as great exactness is not necessary for any object I have now in view. It is given out as the result of experiments made by others that from ten to twelve times in a second is as frequent as these sensations can become distinct. It is probable, however, that persons of a sensitive or active temperament can distinguish a greater number in a given time than those who differ from them in this respect. Quick, nervous temperaments are doubtless more active than phlegmatic ones. And so, too, it is probable that this frequency will vary in the same individual with varying states of health, etc.

8. And for the same reason, namely, the fact that sensations require some perceptible amount of time to become distinct and be distinguishable from one another, if they occur too frequently, they blend into a series, as if produced by the same object in different stages. The popular toy, known as "the magic wheel," is of this kind. Several pictures representing one and the same object in different positions are made to pass rapidly before the eye—so rapidly that the sensations run into one—and the beholder cannot persuade himself that he is not seeing the same object actually passing through a series of stages or conditions instead of a series of similar objects in different situations.

9. Sensations are conveniently classified in reference to the organs in which they originate, as (1) those of sight, (2) smell, (3) taste, (4) hearing, (5) touch, (6) general sensibility, or pain. The reason for this difference may be, and probably is, to be found primarily in the nature of the sensory tissue in which the nerve

terminates. Just as in the world of inorganic matter no reason can be assigned why one substance should be affected by, or have an affinity for, another, and yet not for a third ; so here, no reason can be assigned *now* why numerous objects should affect the tissue around the termination of the optic nerve and not that around the termination of the olfactory, or why odorous objects, for example, will affect the olfactory and not the optic or auditory nerve. But each variety of sensory tissue, serves to increase our sensibility, and brings us into new relations to the objects around us. One with the sense of touch alone would know but very little of the world in which we live. And of all the organs of sense, perhaps, the eye adds the most to our knowledge.

10. Sensations are therefore primarily of six different classes, according to the six different kinds of sensory tissue and sensory nerves ; that is, there is one class for each kind of nerves, as olfactory, optic, gustatory, auditory, tactile, and the nerve of the general sensibility. Nor will these nerves ever perform any function but their own. The prick of a needle, for example, will produce pain in the general sense, a flash of light in the optic nerve, a shrill sound in the auditory, a pungent odor in the olfactory, and an acrid taste in the gustatory. And each nerve, or rather the organ with which it is connected, seems to be adapted to some one property or class of properties in the objects by which we are surrounded. If man had no eye he could not see, and then for him objects would have no color ; and so, too, if objects were not luminous they could not be seen, whatever might be the number or kind of eyes we should happen to possess.

11. I have stated that what we call in common language "nerves," are in reality bundles of the nerve fibres, which extend from the ganglia to the sensory tissue in

which they terminate. And each nerve has a tract of its own for which it performs the functions of its office. Thus the skin is the organ of touch, but its sensibility differs greatly in different places. And it is found that where touch is the most distinct these tracts or districts are the smallest. Thus if you touch the ends of your fingers with the points of a pair of compasses, only a small distance apart, you perceive at once there are two points and not one merely. But on the arm or on the side of the face you would be likely to feel them only as one. In this case the two points fall upon the tract of one nerve, whereas on the fingers the tract is so much smaller that they could not fail to touch the tracts of two fibres rather than that of one single fibre.*

12. I have spoken of sensations and the senses as they exist in man. So in the animal kingdom below man it is certain that some of the orders have the same number and variety of sensations as man, with distinct organs for each. And in some cases there seem to be organs the like or analogy of which we do not find in man. Of this kind are the *vibrissæ* of the cat family, and the *antennæ* of insects. These are manifestly organs of the sense of touch such as man has not; though it does not appear very probable that they afford a class of sensations altogether distinct or very different from those of touch in man.

13. But in the lowest orders of animals the phenomena of sensations are still less understood. Thus we find no distinct organs for many of the senses as we find them in man. General sensibility is of course inseparable

* The best discussion of this that I have seen is in the *Liepsic Journal "Aus der Natur,"* parts of which are translated and published in the *Smithsonian Report* for 1865, pages 249, 276, and especially page 271.

from animal life. But with regard to the special senses, it is difficult to understand how their functions can be performed when there is no special organ for them. Nor is it always easy to determine where, in the ascending scale of animal life, distinct organs are to be recognized. It is not propable that the "eyes" as they are called, of the star-fish, are organs of vision. And in fact the whole subject of sensation in the lower orders of animals is involved in too much of uncertainty to be a subject of anything more than investigation or conjecture for the present.

14. It seems not unlikely, however that the several kinds of sensory tissue, and the kind of nerves connected with them, may be generally distributed throughout the body of some of the animals that are in the scale below the point at which distinct organs for the senses themselves, have been detected. Thus suppose the sensory tissue of vision, for example, to be distributed in this way; the whole body, or especially its external tissue or skin, might become sensitive to light and darkness, as it is now to warmth and cold, moisture and dryness. In this case the animal might distinguish light from darkness and possibly objects one from another, very much as persons now do who are partially blind with a film that is translucent though not transparent over their eyes. These forms of sensibility would seem to answer in such cases most of the purposes of this form of animal life.

15. And it certainly must be contemplated as a possibility, although as I think, not yet proved as a fact, that in the phenomena of animal magnetism, clairvoyance, etc., there may be something to indicate a form of sensibility to objects—and a sense—that has not yet been recognised and is not perhaps in conscious exercise by the most of mankind. It is certain that the dog will

recognise and distinguish the footsteps of his master several days after he has passed. We *suppose* it is by smell, but we do not know; and it is difficult to understand how it is possible, by that sense. It may be that there is a sense at work different from anything we have yet recognised, and which is as incomprehensible to us as sight to the blind.

16. It would certainly be easy to collect facts of the most indisputable certainty to show that there is some, as yet, occult influence of this kind acting upon man at times and on occasions, which science has not recognised, which scepticism may scoff at, which credulity may easily pervert, as it is most sure to pervert it, into superstition, but which, nevertheless, is so far a reality that it is now one of "the unconscious influences" that control our actions, and may hereafter be explained in the advance of scientific researches. I refer for illustration only to the very common impression, too common I think to be totally disregarded, of animal magnetism, clairvoyance, second sight, presentiments, etc., as well as the more familiar examples of persons being near when we are thinking about them, or rather of our thinking about them when they are near at hand.

17. Nor, in view of this fact, can we safely infer that the objects around us have no properties that we do not recognise. If all mankind were blind they would have no suspicion of the fact that the objects in the world around them were diversely colored. Hence it is not at all improbable, in itself considered, that the objects we best know have properties that we have never conceived, of. Nor is it any more improbable that there are objects and beings around us whose presence we have no faculties to perceive. And the superaddition of a new sense to those we now have, might reveal to us a world as new

and as surprising as that which would be disclosed to a blind man if he could suddenly come into the full exercise of his faculty of vision.

18. The six kinds of sensations, as we find them in man, are also sub-divided in reference to the properties of objects with which they make us acquainted. Three of the kinds, however, admit of no sub-division in reference to kinds of properties, varying only in degree, as hearing, taste and smell, giving us respectively the sound, the flavor and the odor of external objects. These may vary both in kind, as sweet and sour, loud and low, sharp and shrill; and in degree as loud or louder, sweet or sweeter, etc. But these diversities are such and so numerous that we have no possibility of sub-dividing, classifying or describing them. And for the most part they run into one another by imperceptible degrees.

19. The eye, however, gives us sensations of two entirely distinct classes, color and form; the former, color, depending upon the *quality* of the effect produced upon the sensory tissue, and the latter, form, depending upon the *quantity*. In regard to color, we have all the varieties known to the spectrum, and all the innumerable combinations of them, constituting the colors and shades of color which so diversify the objects of sight in the world around us. And there can be no doubt that this diversity of sensations by which objects appear of such diverse colors, is owing to some difference in the objects themselves, although at present it is impossible to say what this difference is. Nor have we any means of ascertaining whether the sensation in consequence of which an object appears of any given color as red, for example, to one beholder is precisely the same, in itself considered, as that by which it appears to another. The fact that the color of the object is called by the same name

proves nothing ; since the name is but an arbitrary sign of the appearance of the object, learned from those who used it before us.

20. In regard to the form of objects it is otherwise. The rays of light passing from any object into the eye cross as they pass through the pupil and form an inverted image of the object on the retina. And a ray of light coming from any point in the object preserves its position in relation to others, with the exception just stated, until it reaches the retina ; hence the image formed has precisely the same form and shape as the object itself. And this is totally independent of the quality of the sensation produced, and whether the object be of one color or another. Hence while a change in the constitution of the sensory tissue might change the sensation produced by the color of the object without any change in the object itself, no such change could effect the sensations of form. And as each part of the sensory tissue has its nerve fibre running up to the sensory ganglia, while the effect thus varies in the case of color with the quality of the sensation, in the case of form it varies only with the form of the image produced ; and that, as we have seen, is exactly the same in form (however different in size) as the object itself.

21. This is true however, only on condition that the plane of the surface of the perceived object is at right angles with the axis of the vision. Suppose for example lines to pass from every point of the visible surface of any object to the pupil of the eye, these lines would form a cone or pyramid, of irregular base, this base being the *apparent* surface of the object. If now this base, or a plane representing it, is perpendicular to the axis, we see the object in its true form. If not, the apparent form will be the same as a plane cutting the cone or pyramid at right angles with its axis.

22. This difference between the form and the quality of the sensation, may perhaps receive further illustration by the following case: Suppose I wet the end of my pencil with sulphuric acid and touch it upon different substances, as paper, ivory, pine wood, mahogany, etc., the *form* of the impression will be the same on all, but the color will vary with every difference and variation in the substance on which I stamp the pencil thus wet with the acid.

23. The distinction here pointed out is of the utmost importance, though it has received but very little if any attention by writers on psychology. The difference on which it is founded is that which divides our knowledge of external things into the two kinds, relative and absolute. Or rather it is this difference that makes any of it anything more than relative. We know that an object may appear warm to one person and cold to another; so, too, it may appear red to one and white to another, or change from the appearance of redness to that of whiteness by variation or change in the organs of sight, and with no change whatever in itself.

24. But for the reason given above, if it is round, square or triangular to one person it is so in itself, absolutely to all persons. Of course this statement presupposes that it is seen in its true light and position as spoken of above. No difference in our organs and no change in their tissues can affect our judgment or estimation of the form of objects. This however cannot be said of any other class of their properties.

25. The distance of the objects, though judged of by the eye, is not a matter of sensation. That is, there is no variation of sensation that depends wholly upon distance, or upon the distance of objects at all, in any such way as to be a means of perceiving their distance. We judge of distance by various signs.

(1.) One of the most common is the distinctness of outline. And hence it often happens that in the dusk of evening or in a dense fog we mistake a small object that is very near us for a large one at a distance.

(2.) Another means of judging of the distance of objects is the angle of inclination at which the eyes stand when we are looking at the object. One can easily convince himself of this fact by attempting to put his finger on any object directly before him with one eye shut. While he can put his finger directly upon it every time with both eyes open, he will soon find that if one of them is shut, his touching it is merely a matter of accident.

26. With the sense of touch we have also two, perhaps three, classes of sensations. In the common estimation of mankind, however, many more kinds are ascribed to it; for, as I have already remarked, it has not been customary to distinguish sensations of touch from those of the sensibility of the tissues below the skin, as I have done. And first of all, we have sensations of form by the sense of touch or by the eye, and here, as in the case of that organ, they depend upon the shape of the object itself, the number and relative position of the *papillæ* affected by the external object; only in this case the impression of the object is direct and not inverted as in the case of the eye. Any object touching the skin affects a certain definite member of the ultimate nerve fibres, and they are in a certain definite relative position to each other, and hence the sensation varies accordingly, totally independent of the quality of the sensation..

27. Then in the next place, we have the roughness or smoothness of an object, producing a variety or a difference in the sensations varying with its own quality. We may perhaps designate this as the sense of surface; the delicacy of the susceptibility to sensations of this class

varies in different parts of the skin. It is greatest in the ends of the fingers and palm of the hands, where "the sensory tracts" are smallest and the *papillæ* in which the nerves terminate are the highest and stand most closely together. And that this class of sensations is a peculiar function of the skin is rendered obvious by the fact that if the skin be removed we are unable to discriminate rough from smooth objects *as such*. We distinguish them only as the one gives us more pain than the other, and by the kind of pain which the different objects occasion.

28. The temperature of external objects is also a matter of touch. If the skin be removed, objects that are slightly different in temperature from the tissue itself produce no effect on the tissue from which the difference in their own temperature can be perceived. If however they are very cold or very hot they produce a painful sensation, but not a sensation of heat or coldness. And in fact the sensation produced by the extremes of heat and cold can hardly be discriminated. But if any object very cold or very hot be brought in contact with the skin, the sense of touch proper ceases or is destroyed. We cease to be able to tell whether the object be hot or cold and our only sensation is that of the pain caused by the cold or the heat. And this difference is produced in the tissues that lie beneath the skin rather than in the skin itself.

Similar statements may be made also with regard to the wetness or dryness of objects, and even still other differences in the condition of their surfaces.

And thus for external objects we have seven classes of properties as discriminated by the means of special sense: taste, smell, sound, color, form, surface and temperature, moisture and dryness, and perhaps others.

29. Passing now to the consideration of the sensations

of the sub-cutaneous tissues, we have occasion to consider them in two relations.

(1) They are a means of knowledge of some of the properties of external objects, as weight, hardness, etc. We judge of, or perceive, these properties by the effect which objects produce on the muscles, etc., when we attempt to compress objects, to lift them, to pull them apart, as in the case of a piece of wire or a string, or to bend, break, cut or twist them. We judge these properties by the amount of force that is required to produce the changes in objects, and this force I think we estimate by the sensation of muscular contraction. When we judge the weight of anything pressing upon our hand, etc., it is clearly by the condition of the tissues compressed.

(2) Besides this the subcutaneous tissues are each of them found to have a class of sensations peculiar to itself and to its different conditions. We have sensations of hot and cold as in inflammation, fever and chills. We have sensations of hunger and thirst, of fatigue and exhaustion after exertion. And in fact every form of disease and every abnormal condition produces a kind of sensation peculiar to itself which becomes what are called in reference to diseases and the prescriptions for them "symptoms."

30. If now any of the sensations of any of these various kinds extends along up the afferent or centripital nerves to the sensorium, the act which we call perception takes place.

I have used the expression "passes along" as though it was an ascertained or an admitted fact that there is something that passes. But such is not the case. A "sensation" of course does not pass as it is not a thing at all. Nor is it certain, and perhaps on the whole it is not

probable, that there is anything that passes along the nerve. It is, I think, most likely that one cell becomes affected and then affects the one next to it and so on until the sensation becomes general along the whole line; just as in the game which boys play, called "Jack after yeast."* One brick falls against the next in the row, and so on until all have fallen, and the motion given to the first passes *apparently* along from one end to the other, when in fact nothing actually passes at all.

31. It has been claimed that the nerve current, or influence, is the same as electricity. But I think not. The three facts that are, as it seems to me, the most conclusive on this point, are:

(1) The difference of velocity. Electricity passes at the rate of about 426,000,000 feet, or about 80,675 miles, per second; while the nerve current or sensation passes, in warm blooded animals, as man, for example, only about 200 feet per second. In cold blooded animals it is slower. At a temperature of about 60 degrees, it varies from 81 to 126 feet per second.†

(2) If a nerve be ligatured, the nerve current is entirely arrested so that neither sensation can be sent up, nor emotion sent down; while the electric current is not at all interrupted by this means.

(3) If a nerve be cut in two, and the two ends be brought into actual contact, the electric current will pass along the nerve as well as before, but no nerve cur-

* As this amusement may not be known by that name to all, I will describe it: It consists in arranging a number of bricks in a line, each standing on an end, and at a distance of five or six inches apart; then by a slight touch to the first one in the row it falls against the next, tips it over and that in like manner tips over the next, and so on until all the bricks have fallen on their side.

† MARSHALL'S *Physiology*, page 223.

rent, whether of sensation or emotion and volition, will pass until the integrity of the nerve has been restored by its *growing* together.*

32. We can no more tell precisely what is the effect produced in the sensorium by the external object than we can say what is precisely the effect produced in the sensory tissues. Nor can we tell any better how the effect produced by one object differs from that produced by another. And yet it is doubtless owing to these differences, that the objects we perceive appear so different to us. Nor does there seem to be any good reason for supposing that the physiological condition which constitutes the peculiarity of any given sensation in the sensory tissue bears any resemblance to that which exists in the sensorium, though produced by the same object, any more than the act of touching the keys of a musical instrument, for example, resembles the sound which the instrument gives forth. The relation between the two must, indeed, be a constant relation; but it need not be one of likeness, or close resemblance at all.

33. But when the effect is produced in the sensorium, the act of perception takes place and *is determined by it*. I have spoken of this act as involuntary. We cannot prevent it; we cannot control it. We can turn the eye from an object, and thus avoid seeing it. But if the eye be directed to the object, we cannot but see it. We can give it more or less of our attention. But see it we must. Nor is that all; we must see it according to the sensation it has produced. No effort of our own can change its appearance, as from one color to another, or one form to another. We can, indeed, change its position and so its apparent form, or the medium through

* DALTON'S *Physiology*, page 381.

which we see it, and thus its *apparent* color. But the change in both cases is produced by a voluntary act, changing the relations of the object to the organs of sense, and not by any voluntary control over the act of perception.

34. This fact is of considerable importance ; for upon it depends the certainty of our knowledge. If we could see things as we might happen to choose to see them, rather than as we must, no two persons would see them alike. Nor would the same object appear alike to the same person at different times and under different circumstances. In fact, if we had voluntary control of the act of perception, recognition, or the act of seeing an object the second time, and knowing it to be the same that we saw before, would be impossible. But perception although involuntary, is nevertheless an act, and not an effect merely. It is an act of the mind, and is denoted in all languages by a transitive verb. We ascribe it to ourselves as the agent. We say, "*I perceive*;" whereas we ascribe the sensation to something external to ourselves—we speak of it as an effect produced in us, and not as an act performed by us.

35. Nor is this all. I have repeatedly said that it is impossible to send any current down the afferent or up the efferent nerves. From this it results that *all* sensations must not only be involuntary, but they must be produced by something external to, and different from the nerve itself, except in cases of diseased action of the nerve centres. It seems to be well established that the effect or condition produced in any nerve centre, is the same in kind, when produced voluntarily by the mind or soul, sending its influence down to the ganglion, so far as this act of sending it down can be performed, as that which is produced by an external object, passing up

the afferent, or sensory, nerves to the centre. A jerk of the arm produced by an electric shock, implies the same state of the ganglionic mass in which the nerves of the arm originate, as that which precedes and causes the jerk, when that jerk is produced voluntarily by the mind acting as will. Hence, if we could send *any* current, effect, or influence *down* the afferent nerves to the organs in which they terminate, that is, if we could produce sensations ourselves or voluntarily, sensation would be no means of proving the existence of external objects. Nor could it be any sure means of knowledge concerning them.

36. The act of perception, however, is one which we cannot explain. It is most likely that some further change takes place in the tissue of the ganglionic matter of the sensorium, and I am inclined to think that the *optic thalami* are the special organ in which this change of tissue and this act of perception take place. This, however, is unimportant in a psychological point of view.

37. Many theories have been devised to explain the act of perception. Some have supposed that the mind goes out of the body, and lays hold of the object, It has been more common, however, to suppose that something from the perceived object passes into the sensorium. One theory held that certain "sensible species," that is, perceptible objects, having the appearance of the object, fall off from them, and pass into the head. Mr. Locke supposes that "certain singularly imperceptible particles" pass in by the nerves of sense—this passage constituting a sensation—and form, within the sensorium, an image or idea of the object, so that what we really perceive is not the object itself, but the idea-image of it thus formed in the sensorium.

38. But none of these theories are consistent with the facts as we now understand them. Nor would they help us at all to explain the act, or the process of perception, if they were. The act seems to be the simple, uncompounded act of an invisible agent; the act may be described, but not analyzed, and we can define it only by describing it and pointing to it as an act that takes place at a certain time and under certain circumstances. Like the color of an object, we can only point to the object, and allow persons to see it for themselves. We may, indeed, compare it with others, and thus do something towards helping one to understand it. But to be understood, each one must have performed it, and having performed it, he must refer to his own consciousness for what took place at the time.

39. In any act of perception, we may direct our attention, either to the sensation, which is a modification of ourselves, or to the perceived object, which is something external to ourselves. In some cases, the sensation becomes so conspicuous that perception scarcely takes place, or if it does, we think of ourselves alone. If, for example, the hand should touch a hot iron, it is likely that the pain would be so great that we could not tell anything about the object, except the single fact of its being hot. And in regard to taste, smell and hearing, the perception seems to be less distinct. That is, we think more of the sensation, and so of ourselves as affected, and less of the object. Nor is it at all unlikely that if we had only these three senses, we should never think of objects as external or distinct from ourselves. Even now it will often happen that when we hear a slight sound, we hesitate and pause and think whether it be anything more than a mere ringing in the ears without any external object to produce it.

40. This reduces us to the two senses, sight and touch, as the means of explaining the discrimination which we make between ourselves and the objects of perception. That we now, as adult observers, discriminate objects by the eye, admits of no doubt. But I think it equally certain that we first began to do it by the touch. For this, several reasons may be given.

41. *First*, all the organs of special sense, except the skin, are *within* the periphery of the body, and are affected by the objects perceived without being in actual contact with them. The objects we see by the eye, or hear by the ear, may be many miles off, affecting the organ, in the one case, by means of the rays of light, and in the other, by the waves of the air through which sound is transmitted. So it is with smell. In the case of taste, the object must, indeed, be in contact with the organ, but the organ itself, and the object in contact with it, must also be within the periphery of the body. In the case of touch, however, the organ is the very periphery of the body, and any object to be touched, must not only be in contact with the body, but must also be outside of the skin.

42. In the next place, we have had cases of persons, who, having been blind from birth, for many years, have been enabled to see. Experience, in these cases, confirms the view here taken. At first they not only could not discriminate objects by vision, but they could not realize the fact that they were objects distinct from themselves at all. They thought everything that they saw was in their eyes. And it was only after some experience that they came to do what we unconsciously do all the while, namely, see objects as external realities, distinct and often distant, from ourselves.

43. The case of a young man, thirteen years old, who

had been blind from the effect of a cataract over his eyes, and was restored to sight by Chesselden, in 1728, is very instructive. The surgeon says,* “So far from making any judgment of distance, he thought that all objects touched his eyes, as what he felt touched his skin.” In 1801, a surgeon by the name Ware performed a similar operation on another boy about thirteen years old, which led him to think differently of the phenomena of vision. But in 1807, Sir Everard Home examined all the cases, with some new ones of his own and gave as the result: “When the eye, before the operation, had been capable of discerning light only and not colors, objects, after the removal of the film, appeared to the patient to touch the eyes; but when the patient had been able to distinguish colors, the objects seemed to be at a distance.”† Chesselden, however, says that his patient could distinguish “light from darkness,” and the colors of objects but not their forms. “In a strong light, he could distinguish black, white and scarlet,” but not “the shape of anything.”

44. What would be the case with one born and living without the sense of touch must forever remain a mere matter of conjecture; since no such person ever lived, or ever can live. The nerves of touch sustain such a relation to the nervous centres and the vital organs, that life would not be possible with the total absence of that sense. But I am inclined to think that if there were or could be such a person, he would never think of the objects around him—the objects of sight, taste, hearing

* “*Transactions of the Royal Society.*” Vol. XXXV [1728], or Hutton’s Abridgement. Vol. VII, p. 235.

† “*Phil. Transac., etc.* 1807, p. 91. See, also, below, Lect. V, § 28, note.

and smell, though perceiving them all the while, as distinct from himself, or of himself as a distinct object of thought at all,

It seems pretty certain, therefore, that we first distinguish things as distinct objects by the sense of touch, that soon we learn to discriminate and recognize them by the eye, and soon come to recognize them by the other senses, some by their sound, others by their odor, and still others by their taste, all as a matter of progressive education. In the case of Chesselden's patient, it is said that at first "he knew not (by the eye) the shape of anything, nor one thing from another, however different in shape, or magnitude; but on being told what things were, whose forms he knew before from feeling, he would carefully observe that he might know them again." This is, on the whole, one of the most remarkable and instructive cases on record.

45. We see perhaps the best illustration of this progress in case of the internal sense. In infancy, the child is in pain, but does not appear to know in what part of the body even, the pain is situated. But as we grow up and come to know more and more of our bodies, we come to be able to locate our pains. And not only so; we come to know what tissue is diseased, what is the nature and extent of the disease, etc. And all this we learn by aiding the perception by the internal sense, by other means of knowledge. It is by the eye, etc., that we learn that there are divers organs in the great cavities, that in these organs there are several tissues, as nerves, muscles, mucous and serous membranes, etc., and having once learned that there are such tissues, and what is the pathological condition of disease, and having once associated a particular sensation with its appropriate condition, we are able to recognize the condition by means of the sensation it produces.

46. There is one more fact or law in relation to perception that is of great importance in itself, and to which I will, in conclusion of this lecture, call attention. It is this: in order to the perception of an object, there must be a co-ordination of objects, and in all cases, except sight, the co-ordination may be between any two states of the same object. But in the case of sight, there must be two objects, at least, present at the same instant or no one can be seen.

47. I have already called attention to the fact, that in order that a sensation may become matter of consciousness, and so a means of perception, it must have been recently produced, and this, of course, implies a change in the object which is the cause of the sensation. Thus to recur to an illustration already given, the air in contact with our bodies is not felt so long as it is at rest, and at a temperature nearly the same as our bodies. But let it be set in motion, or suddenly become cooled and we feel it. So with a ring on one's finger: move it from its accustomed place, and we not only feel it in the new place, but we also feel its absence in the place from which it was removed.

48. In regard to the eye, however, as has been said, there must be two objects present at the same time. It is commonly known that the blind have no ideas of color, or of light, and that the deaf have no idea of sound. But it is not so generally considered, though equally true, and perhaps more important, that the blind have no idea of darkness, though immersed in it all the while, and the deaf have no idea of silence any more than of sound. But let the deaf hear and the blind be able to see and they at once perceive, because they discriminate. Hence, we infer that if all the objects before the eye were of one color, and precisely the same

shade of that color, we could not distinguish them, and we should perceive no one of them. We should be reduced to the same condition as the blind, whatever might be the color of objects or of the light we see them by, if there were no difference in the color or shade of color. It is only as objects or parts of objects are limited off from one another, by the diversity of their hues and shades, that we are able to perceive them at all. And two parts of the same object are virtually two objects, so far as sight is concerned, so soon as they come to be of different colors.

49. But suppose the sphere in which we are placed were filled with an intense, pure, white light, and the objects have no power to analyze it, or suppose the light were red or blue, and so could not be analyzed, and so intense that there could be no difference in shade, and it would be the same to us as perfect darkness or the entire absence of light. And of course, the effect would be the same so far as the distinguishing of objects is concerned, if objects themselves could not analyze, absorb or reflect light. They would be all of one color or no color, and of the same shade, and as invisible as in the most intense darkness. Hence to be seen, there must be either two objects, or two parts of the same object, each part of a different color or shade of color.

LECTURE V.

FALSE PERCEPTION AND IMAGINATION.

1. I have treated perception as an act of the mind to which some outward object, acting upon the organs of sense, is the occasion and condition. I proceed now to consider a class of acts which are, in many respects, the same as perception, though differing chiefly in the two important features. (1) They do not depend upon and are not necessarily conditioned by any sensation at the time they are performed, and (2) they are voluntary to the extent, at least, that we can produce them at will, and control, within certain limits, their character. This class of acts we call Imagination, and in some of their varieties Fancy.

2. Suppose, for example, one has his eye fixed on any object, he sees it as it is. The act of seeing and perceiving depends upon the object being present, and upon his eyes being directed to it. But suppose now, the object entirely removed from sight, or that the observer's eyes were closed or turned away, he can still "*see exactly how it looks,*" as the expression is. This act we call imagination.

3. In the preceding lecture, I have spoken of perception as it takes place when the organs of sense are healthy

and act in their normal condition. But it is manifest that if the organs are not in health, or acting in their normal condition, we shall have some form of imperfect act which we call false perception; and we shall best accomplish our purpose of examining and explaining imagination by first considering the forms and conditions of false perception.

4. We call that true perception, in which we see things as they are. Or, if one objects to this definition, as assuming improperly a doctrine of ontology, we may accomplish all the object of the definition, by saying that that which we call true perception is that in which any one individual sees objects as they appear to, and are believed to exist by mankind generally; while that would be a false perception in which the object should appear to any one as it does not appear to others generally, and who, for the reason that they are the majority, and agree among themselves in this respect, are assumed to be right. Thus, if one man should see a white object to be red, or see an object where others, similarly situated, could see none, we should call the act a false perception.

5. It will be readily believed from what has been said that if any of the nerve tissues on which sensation depends are diseased, or in any abnormal condition, false perception will be the result. Such abnormal conditions are by no means uncommon. Most persons when suffering from colds, headache, weakness, exhaustion, or other cause of debility, have what is called a "ringing in the ears"—a sensation produced by no outward object, but rather by something in the nerve or surrounding tissues. So with the optic nerve: persons often have what is called "*muscæ volitantes*," or the appearance of little black specks, as flies, floating before the eyes.

6. Any distortion, or disturbance, of the organ of sensation, will produce a false perception. Thus, if one of the eyes, for example, be pushed out of place by pressure on the side of it, we see two objects instead of one for every one that is before the eyes. If we cross the fore finger over the one next to it, and roll them on a marble or other small, round body in the palm of the other hand, we shall feel two objects instead of one. In the case of some persons, a distortion of the tongue, as in the effort to touch with it the hindermost tooth, will produce an unpleasant taste; like that of a nauseating drug. In my own case it produces the taste of tobacco.

7. The physical disturbances which may be supposed to give rise to false perception may be of four kinds. I say may *be supposed* to do so, because the anatomy and physiology of the organs of sense, including the sensory tissue in which the nerves terminate, are not so well known as to enable us to speak with entire confidence on the subject. They are as follows :

(1) Any disturbance, or diseased condition of the sensory tissue itself.

(2) Any displacement of the organ of sensation, putting it out of its normal relation, or position, as in the case of the eye pushed aside, just referred to.

(3) Any diseased condition of the afferent nerve itself, in consequence of which, a sensation properly made is not correctly reported to the sensorium.

(4) And finally, any abnormal condition of the sensory ganglia themselves will, of course, produce false perception. This seems to be the case in what are called "spectral illusions," and probably, also, the hallucination of "delirium tremens;" although the inner coating of the stomach is perhaps the first of the organic tissues to be affected in the production of this terrible malady.

8. In most cases, the condition of the tissues which produces the false perception, is in itself, when it first occurs, a matter of consciousness. Thus, if one eye be pressed aside, or the fingers crossed, as above spoken of, we are usually aware of the displacement of the organs of sense before we are aware of the defect in the function itself. There are, however, other cases in which we first begin to suspect that there is something wrong in the organs of perception, or "in ourselves," as we say, from the fact that we discover that there is something wrong in our perception, or from the fact that "*things don't seem right*" to us. Often in the case of paralysis, the first intimation is the inability to move the limb, which we discover only when we make the effort.

9. But in all the classes of cases, named above, where the organic function, or difficulty, is confined to one organ, we have the means of correcting our judgment concerning the object, by the use of the others. Thus, in the case of *muscæ volitantes*, we see the specks, but on raising our hand to brush them away, we find by that means, that there are no such objects as we supposed we were seeing. So in delirium tremens and other forms of hallucination; so long as the hemispheres of the brain remain in their healthy and normal condition, we can reason ourselves into the belief, or perhaps I should rather call it, knowledge, that what we suppose we see is an illusion.

10. When, however, all the ganglia become involved either sympathetically, or by the disease extending to them, we have what is recognized and called insanity. Consciousness itself becomes involved, and the patient can no more see or rightly understand his own mental acts, than he can rightly perceive the objects around him. And of course, in many of the ordinary cases of

insanity, perhaps in most of them, there is no derangement of the organs of sensation and mere perception. Things are perceived aright as they are, but the reasoning from them is of such a nature as to involve not mere error only, but also to prove disease of the organ.

11. This whole matter of "the pathology of the mind," as Maudsley calls it, or rather "the pathology of insanity," as it should be called, is very uncertain and must remain so for a long time. One of the best authorities, Dr. Gray, of the Utica Asylum, assures me that there are no cases of insanity in which he cannot discover organic disease by inspection and examination of the brain, if he can have access to it soon enough after the death of the patient. But no one, I believe, has yet pointed out the precise part of the cerebrum or encephalon that must become diseased before the patient becomes insane in the sense of being unable to reason and by reasoning convinces himself that he is insane. Nor has it been shown what is the character of the disease on which this condition of mental activity depends. It is, however, a result in which all authorities concur, that insanity is the result of some disease, organic or functional, of the brain, or some one or more of the bodily organs, and it seems most likely that each organ has its own form of insanity.

12. In order then, that perception may be true, it is necessary that the organs be in their normal position and in their healthy, natural condition. But almost any disturbance of the nerves or even mere excitement, or intense mental activity, seems to disturb the organs of sense so as to produce confusion in the perceptions that occur, while we are in such a state. The organs should be "*achromatic*," or without power of giving their own color to the objects we perceive by them. Or, in the

use of another figure, we may compare the disturbance of the organs occasioned by excitement, etc., with little ripples on the surface of an otherwise transparent sheet of water. When thus disturbed, we can see many things on the bottom under the water, but nothing distinctly.

13. In some persons, the organs of perception scarcely ever seem to be in a normal, or healthy condition. They seldom see things as they are, or agree with others in regard to mere matters of fact. There is always some "chromatic aberration," some "rippling of the surface," with almost every excitement, even with that which the mere act of perception itself occasions.

14. Imagination is in some respects like false perception. In imagination, we do not, indeed, always necessarily think things to be as they are not. But it is the thinking of a thing as though we were seeing it after the sensation, on which perception depends, has ceased, and so after the act has ceased to be perception. Let us suppose, for example (as I have already expressed my belief), that the optic thalami are the organ of imagination and of perception as distinct from sensation. Let us suppose, further, that when the eyes are directed towards a certain object, and that object produces a sensation, a part of which consists in the nerve cells of the optic thalami being put into a certain condition—one certain condition for each object perceived—and let us suppose, further, that this condition continues after the object is removed and the sensation ceases, the mental act which that condition of the organ occasions and with which it is accompanied would be imagination.

15. Now let us notice one thing more. We have seen, as in the case of the electric shock, that while the ex-

ternal object produces a certain state of the ganglia of the spinal axis, and thus, by reflex action, contraction of the muscles and a jerking of the hand, so on the other hand, we can voluntarily, by an act of will—an act which commences within—produce the same condition of the spinal ganglia, resulting in the same motion of the limb. So with the optic thalami. We can produce voluntarily the same condition as was produced by an external object, and then we do not perceive the object indeed, but we imagine it.

16. I have spoken of imagination and ideation as the same thing. I should prefer the latter term, if it were in as general use as the former. They are akin in their etymology. The one being from the Latin, the other from the Greek, and signifying about the same thing. Both words had their origin in a theory which needs to be explained before we can fully understand the words. The theory supposed, or taught rather, that in perceiving an object there is something *in the mind* that resembles the object, although of course, almost or quite inconceivably small. This something was called the “image,” or “idea,” of the object. But the mental act which we call imagination consists in thinking of the thing as it is, and especially with reference to the three properties, form, size and color. This act differs from perception, as before said, in not being dependent upon a sensation existing at the time the act is performed, and also, for the most part, in being less vivid and distinct than perception.

17. But it is generally admitted now that no such ideas are formed, that in the words of Cousin* “there is noth-

*“*Course of the Hist. of Mod. Philosophy*,” Sec. XXII. Or Psychology, translated and edited by Dr. C. S. HENRY page 250 ed. 1856. DESCARTES, however, had preceded COUSIN in this.

ing in the mind but the mind itself, its own states and modes." And this theory of ideation, or the formation of ideas in the mind as something distinct from the mind, and as things that are real and in a manner substantial even, has so entered into and modified the usage of language, that it is impossible now to get along without using the word "idea," and in a manner too that will imply and suggest the theory which grew out of a belief in their reality. In fact the existence of such ideas was seriously entertained until the time of Reid, in the last century. Locke's theory of perception and of knowledge already referred to in the last lecture, was based upon the reality of idea-images formed in the mind in the act of sensation, and his system was characterized by the denial of "*innate* ideas," that is, ideas in the mind not formed in sensation or reflection, and hence called "*innate*" because they were supposed to be in the mind before any mental activity.

18. Reid denied the existence of such ideas as Locke had supposed, and was so successful in his refutation of the theory that it has scarcely, if at all, a believer in it now. Cousin, however, at a later date repeated Reid's refutation and confirmed its force; but he held, contrary to Locke, that there are certain ideas, not idea-images, that is, not representatives of external, visible objects, but rather of external invisible realities and relations, as "time," "space," "substance," "the infinite," "cause," "good and evil." And even Sir William Hamilton and the writers of his school hold that in perception, certain "concepts" are formed by means of which the acts of imagination, memory, etc., are performed. And hence his distinction of "presentative" and "representative" knowledge; "presentative," being that in which we perceive objects and acquire our first knowledge of them; and representative

that in which we think of them without, at the time, perceiving them.

19. But I regard all such objects, whether we call them "ideas" "concepts" "notions" or whatever else, as purely fictions of fancy. We have not the slightest proof of any kind, of their reality, unless we may regard the fact that their reality is implied in the common phraseology of European languages, as a proof. And the assumption of their reality involves many palpable absurdities. The supposition of their reality, however, affords a convenient phraseology and a ready means of expressing many psychological facts that could not be otherwise expressed without great circumlocution—a stiffness and awkwardness of expression that would be felt to be intolerable.

20. The case is like many others in all departments of science. In optics, for example, we speak of the "image" formed, by mirrors, lenses; etc., speak of their being formed in this place and in that, of their size, and even make a distinction between "real" and "virtual" images. And yet everybody knows that the "image" is no reality, there is no such thing formed, it has no reality, no substance, no being, except a purely fictitious one. In the same way, in geography and astronomy we talk of lines, as the equator and parallels of latitude, of planes, as the ecliptic, as though they were realities; speak of crossing them, cutting them, of their crossing and cutting other lines and planes, and yet these lines and planes are no substantial or visible realities.

21. And in the same way even scientific men were until the most recent times accustomed to speak of certain "imponderable agents," as heat, "light" etc., as realities, as substantial as oxygen or carbon. But it is now proved, or rather perhaps conceded, that these supposed realities and agents are only properties of bodies "modes

of molecular motion." And yet we could not well get along in the discussion of physical phenomena and laws without using words that not only imply their reality, but which make them agents and causes of the phenomena we have occasion to discuss, as when we speak of heat's expanding solids, converting fluids into vapor, etc.

22. This use of words although suggesting what is not true, can do us no harm if we do but understand the phenomena themselves. So with the use of the word "idea." To have an idea of a thing is really to be thinking of it, or possibly in some cases to understand the thing. And in what we call "*ideation*," we think of objects, as realities, without perceiving them, and even often when we know that they are not so. But when we raise any question in regard to the origin of ideas or make any assertion concerning them that necessarily implies their reality, we are sure to be involved in confusion and error, as truly as the man who should suppose that the equator is a visible line that he could see with his eye, kick against with his toe, and should begin thereupon to inquire who made it, or when and with what instrument, it was made.

23. Imagination or ideation enters largely into what is commonly regarded as memory. In recalling the past we see its objects and scenes in "the mind's eye" as they occurred, though less distinctly. It also forms a large part of our dreams; for in them we think of persons and things and scenes as real, though no sense-perception is taking place, and often the objects and scenes of which we dream neither have now nor ever have had any reality. Often, indeed, they are absurd and impossible. And yet a leading element of memory and of dreams alike, exists and depends upon the activity of the organ which performs the function of imagining, whatever that organ

may be, while the others are asleep or inactive. In the case of memory there is more than imagination indeed, a something more which we shall try to explain in a subsequent lecture. And in dreaming, the activity of the organs or of one part of the organs of the mental acts while the others are at rest, which is in fact the cause of dreaming, is doubtless produced by some disturbing cause of a physical nature which prevents complete sleep or repose.

24. I have spoken of the idea or thought of an object as being generally less vivid in imagination than in perception. This is doubtless usually the case, and it is manifest in two particular forms, as outline and color. The form is a little indistinct and the colors do not appear to have their usual or natural brilliancy. And it is to a large extent, by these means that we actually and habitually distinguish the effects of perception and reality from those of mere imagination, or acts of imagination from acts of perception. But in certain cases of abnormal activity of the mental organs, perhaps, and I think probably, the optic thalami, the vision or ideas of imagination seem to be more distinct, vivid and real than the objects of perception. And some drugs, as opium, hashish or Indian hemp, produce this abnormal condition in those who are accustomed to the use of such drugs. In some cases persons under their influence seem to become almost insensible to sensation.

25. Passing now to the more important phenomena of imagination, the first that I would mention is that which occurs in perception and more especially in perception by sight and touch.

I have alluded to the situation of the optic thalami and their connection with the nerves that come from the organs of touch and sight, and have expressed my belief

that they are the organs of imagination or ideation. I have also expressed the opinion that we first get the idea of the exteriority of objects and their possessing the three dimensions of length, breadth and *thickness*, by the touch; and that after that, we come to think of them as having these dimensions, objective exteriority in relation to ourselves, and distance from one another as being more or less remote from us, the beholders, by sight of them and whenever we behold them. Hence if I am right in my opinion, without the sense of touch we should never think of them either as solid or as realities distinct from ourselves or distant from one another.

26. It seems to be certain beyond reasonable doubt that so far as mere sight alone is concerned, we see all things as if they were flat surfaces and as in one plane. Of this the simple fact that we see by the image formed on the retina of the eye would seem to be sufficient proof of itself. This image is a picture on a plane surface, or possibly on the surface somewhat concave. But the curvature of the plane makes no difference in this respect; the picture or image is precisely like that formed on the object glass in the camera of a daguerreotypist or photographer. And in the case of the eye, as in that of the camera and on the object glass, the image is precisely the same when made by a picture of the objects as when made by the objects themselves; that is, the image on the object glass and on the retina of the eye is just the same, other things being equal when made by a mere portrait painted on plain canvass as when made by the real face from which the portrait was painted.

27. Another fact which would of itself also seem conclusive on this point, is that which is so often experienced in looking at pictures, frescoes, etc., in which by the distribution of color and shade, mere plane surfaces

are made to look like solid objects so far that the beholder is deceived by them, and even in many cases, when he has raised the question as to the reality of what he sees, he is unable to decide without a relative change of position, giving a new distribution of light and shade, in which a difference between the appearance of an object and its resembling picture might be detected. I suppose there is no person who has not on the first sight of some well-executed painting supposed he was looking upon the real solid objects, rather than upon a piece of variously colored canvass.*

28. Another fact bearing upon the same conclusion and illustrating the doctrine I am here trying to establish, is that which we often experience in looking at pictures and prints, with the fullest knowledge that they are but plain surfaces diversified by color and shade, namely, the fact that by issolation and effort we come to see them standing out in relief and in distance from one another. This process is greatly facilitated by what is now in common use and known as the stereoscope. It is true indeed that this process is aided somewhat by the peculiar way in which stereoscopic pictures are made. But if we take a picture well made and without the pe-

*CHESSELDEN says of his patient already referred to (Lect. IV § 43) "they [that is, the people around him] thought he soon knew what the pictures represented which were shown to him, but they found afterwards that they were mistaken; for about two months after he was couched, he discovered at once that they represented solid bodies, when to that time he had considered them only as parti-colored planes or surfaces diversified with paint. But even then he was no less surprised, expecting the pictures would feel like the things they represented, and was annoyed when he found those parts, which by their light and shadow appeared now round and uneven, felt only flat like the rest; and asked which was the lying sense, feeling or seeing?" An. 1628, *Hutton's Abridgement*. Vol. VII, p. 235.

eniarities of the stereoscopic pictures, and look at it through any tube or even through the hand partly closed as to make a tube in form, we see the perspective as it is called, much better than we can do without such aid. And after having familiarized our minds with the view thus obtained, we get the result without the use of the same means whenever the eye lights upon the same picture again.

29. It appears therefore that it is by imagination or ideation alone that we see things as solid and more or less remote in distance from us and from one another. Hence imagination supplements perception, by giving to our perception of external objects that which makes up their solidity, their dimensions in the direction of distance from us, their perspective; and enables us to see things as they are in space and in their groupings and relations as parts of a universe. Without it, all things would appear as simply plane surfaces and the same distance from us, differing from one another only in color, in the size of lateral dimensions and in distinctness of outline, just as the stars of heaven, though very different in their distances from us, appear, nevertheless, to be in one common surface at the same distance from us, however different in distance from one another.

Hence it would appear that touch is the first sense to excite and stimulate imagination; but afterwards, as we attain to the maturity of our years and the fuller and more complete exercise of our faculties, imagination comes to be subordinate, and supplementary simply to the functions of sight.

30. Nor is this all. We find much unmistakable proof that in acts of recognition, that is in the perception of objects a second time and knowing that we had perceived them before, imagination performs a much larger part

than it did at first—greatly facilitates and abridges the act. Thus after having seen any object once, and as the saying is “having formed a distinct idea of it,” on the next and all subsequent occasions we actually see less and imagine more, that is we perceive and notice a few traits only and imagine the rest. Hence it is that slight changes in unimportant or inconspicuous features may for a long time pass unnoticed. We did not see them and continued to imagine the object as we first saw it, or last noticed it.

31. And in persons who are slow of perception and observation this part of their mental activity is relatively very great; they actually *see* but little of the objects around them and the events that are constantly transpiring within the range of their personal experience, but they *imagine* much; and hence it is that they are so often mistaken, so seldom agree entirely with others who have observed or experienced the same thing. So far as both had actually seen and observed, they agree; in what they imagined, they are at variance in their statements. And this fact will account for a very large amount of the contradictory statements, discrepant testimony and discordant narrative that we meet with everywhere among the assertions of men relating to what they claim to have seen and heard. They did not really see or hear so much as they supposed they did, and were in fact indebted to imagination for a large share of what they supposed to be observed facts.

32. In many cases the sight of an object leads us to imagine other properties such as could be perceived by other senses only. Some four years ago, a meteor was seen to burst into parts, and all who saw it felt perfectly sure that they heard the report of an explosion. But it was soon ascertained that the explosion took place some-

thing more than sixty miles from the surface of the earth, where the air is so rare (even if the atmosphere extends so far) that no sound could be produced; and moreover, those who heard it supposed that there were at most, not more than four or five seconds between the explosion and the time when the sound reached them, whereas if it had been a real sound proceeding from the explosion it would have required at least as many minutes.

33. I infer therefore that on seeing the explosion the beholders, by an act which is at least kindred to imagination, supposed the usual accompaniment of such an occurrence. And this I think to be generally the case, namely, that when we see or hear any one thing we are apt to suppose, and consequently to believe, that others which ordinarily accompany that which we actually observed, did actually occur also, and accompanied what we saw. And this is undoubtedly more likely to take place when the mind is somewhat excited or surprised by what we see, and also more likely to occur with ignorant and uneducated persons than with those who have accustomed themselves to habits of caution and careful discrimination.

34. Imagination is therefore a function that assists and supplements perception, facilitating its work, often doing most of what we ascribe to perception. But it not unfrequently misleads us and always needs to be watched. By it, also, we accomplish, in acts of perception much that by perception alone we never could have accomplished. It enables us to see the world and the objects in it in their true relations and positions in space. Like perception also, it occurs to some extent as the inevitable result of sensation, so that no act of perception by the eye ever occurs without something of imagination

following it. And in all cases of the recognition of an object by any other sense than the eye, as when we hear taste or smell an object, we think of it as an object and as it is, or is supposed to be in reality. And it is by an act of imagination that we do so.

35. And this is nearly akin to another very extensive class of mental acts which must be regarded as acts of imagination also, although in this form of the mind's activity we are accustomed to speak of it as fancy rather than imagination. It consists in the *objectification* of the properties and modes of objects, so that we come to think of the properties and modes as substantial realities, real causes and agents in producing the phenomena of the external world. These objectified properties are always denoted by what are called abstract terms as "whiteness" "solidity" "life," "energy" etc.; and so far has this gone that what has hitherto been called metaphysics has been occupied with mere objectified abstractions, treating them as if they were concrete, substantial realities.

36. There can be no doubt that what we actually see are the substantial objects that exist around us. We see the paper and not its whiteness; we feel the iron and not its hardness; we smell the rose and not its odor; although for the convenience of the thing and for brevity's sake, we often speak of seeing colors, smelling odors, etc. But what we mean is the thing itself, the paper, the rose, etc. The paper *is* white, the rose *is* red. We then think of the paper *as* white, the rose *as* red, and then of the *whiteness* of one and the *redness* of the other, and in this, by an act of fancy or imagination, of which for the most part, if not always, we are unconscious at the time, we objectify the abstraction—that is, make it an object of thought—a thing about which we think and of which we speak.

37. And as soon as men began to philosophise, the question arose as to these properties, whether we perceive them or the objects—whether they can be separated from the objects, and whether there be any substance remaining after the properties are taken away—whether the objects could be annihilated and yet the properties remain in existence.

38. In the same way as soon as men began to think of themselves, they became conscious of thinking, and hence by the objectification of thinking we have the word “thought,” and then as a synonym of thought, “ideas,” and all the inquiry, discussion and dispute about the origin and nature of that which we ourselves had created. And so too in the material world. We see luminous bodies and then objectify their luminosity into “light;” we feel warm or hot bodies and we have by a like process “heat.” And we apply these creations of our fancy, heat, light, electricity, etc., as real causes or forces, to the explanation of the changes that take place in the material world. If we look through any book or any paragraph in a book, we shall find that in more than half the propositions the word which is the grammatical nominative to the active verbs and the grammatical objective to transitive verbs, are abstract—and consequently they are the result of the act of fancy. I have been speaking of, in objectifying mere properties and modes. In some cases the abstract term is used by metonymy for the concrete; but in a far greater number of cases, especially in metaphysical speculations, the abstract term is used without consciousness of the metonymy, and in such a way that if we do not take the abstraction to be a concrete reality the sentence means nothing.

39. As I have already said, we are, for the most part

entirely unconscious of this "trick of fancy." And it is one of the most difficult things that the student of metaphysics has to do, to realize the fact that so many of the objects of thought that he has been accustomed to treat, as realities, are really only fictions—the creations of his own brain. But in many cases, we consciously and intentionally objectify abstractions in order to find—if not a cause—yet a name for a supposed cause, of an observed phenomenon, and we have such words as "phlogiston," "vital principle," "latent heat," "vis inertię," "natural selection," etc.

40. The voluntary and involuntary acts of imagination are to each other as the reflex and the voluntary acts already spoken of and illustrated by reference to the jerking motion of the arm produced by an electrical machine. This voluntary exercise of imagination we put forth whenever, in reading or hearing of an object, a landscape, or a scene, we try to think of it as it is, and realize how it looks. We are often conscious of the effort to follow in imagination the description we are reading or hearing.

41. So, too, in all cases of invention, imagination enters largely into the complex action of the mind. We form, as we say, "ideas" of things, or plans of them, in the mind, before we attempt to realize them in the drawing, on the painted canvass, in the statuary, the sculpture, the landscape or the architectural structure. Imagination is, therefore, indispensable as a means of knowledge and of improvement. We must have enough of it to understand the plans of others in order to work under them and be of help in the execution, or be, in fact anything but an hindrance — always in the way.

42. And finally, imagination is limited by the matter given in perception. It may continue after perception

is ended, but it can never represent any object by properties that have not been given in sense-perception. Thus the blind cannot imagine or think of objects by their colors, the deaf, by their sounds, etc. We can, indeed, imagine objects of colors which we have never seen them to possess. But in order to do so, we must have seen something else of that color. Thus, if we had never seen anything that is red, we could not imagine a red horse, or a red object of any kind.

43. I have already spoken of an act of the mind which is like imagination, and has usually been called by that name, adding to the functions of some one sense, that of another, without any corresponding sensation in that other. There is another act still, similar to imagination, called *conception*, but differing from it in the important fact that we can conceive of what is invisible, and so, unimaginable. If we adhere to the definition of imagination already given, we cannot speak of imagining what is not in its nature visible. We cannot imagine the air, though doubtless a reality, because it has no *visible* form or color. I dare say, however, though I do not know, that the blind who have always been so, can imagine by means of touch alone. But in those cases in which we think of what is known or believed to be real, though they want the sensible properties of sight, as air, mind, God Himself, we call the act conception rather than imagination, and then we have the fact that we can conceive of and believe to be real, what we cannot imagine. We can imagine then only what has, or to which we ascribe, sensible or material properties, as color, form, etc.

44. This distinction, and the difference on which it is founded, is of great practical importance. The first truly mental function that is performed in infancy is doubt-

less perception, and the next in order, which follows soon upon it, is imagination. Hence we make perception and imagination tests of reality, because it is by them that we first learn to test the reality of things. And we naturally feel that what we cannot imagine cannot be real. A mind, or anything that can think and be a reality, and yet not visible, with form and place seems to be a non-reality. And the same difficulty we find in believing in the existence of a Being, who can be everywhere present and nowhere visible. And I doubt not that most of the professed materialism that has appeared among philosophers, as I know that most of the atheism, and *all* the objection to the personality of God that we encounter in their writings, have arisen from the fact that these objects are in their very nature *invisible*, and so cannot be imagined, or subjects of imagination at all.

45. It is a matter of doubt how far we can, in imagination, combine simple elementary properties ; whether, for example, one who had seen two objects, one white and the other black, could imagine one that is grey, or in like manner could combine red and yellow to make orange, or yellow and blue to make green. Something of this combination we can undoubtedly do, and perhaps the amount varies in different individuals. But in no act, not even in the phrenzy of delirium, or in the wildest vagaries of our dreaming hours, do we ever think of any object by a sensible property, the idea of which had not been obtained in sense-perception.

46. It will be readily supposed from the relation of imagination to perception that where perception is deficient imagination will be comparatively abundant. The nervous system, like all the other bodily tissues, seems to require activity. And without a normal activity it be-

comes restless, and active from mere restlessness. But as perception cannot take place when there is no sensation, real or false, to give occasion to it, this restlessness of inactivity takes the form of imagination. And so, too, if the organs of perception are imperfect, defective or slow of action or drugged with opium, the active brain is very likely to busy itself with things that are imagined rather than perceived, objects of fancy rather than of reality. Hence, in children, savages and uneducated persons generally there is a preponderance of imagination and fancy over observation and careful, exact thinking. And in some persons of a poetic temperament, there is a predisposition to an undue exercise of imagination, always imagining things as they would have them to be, rather than taking them as they are.

47. The mind is also largely stimulated to imagination by hearing or seeing words, whose meaning we do not know, in connection with others that are understood. Instantly we are at work imagining something that will supply a meaning to the word of unknown meaning. And we seek a sense that will harmonize with the words whose meaning is known to us, so that the meaning of the sentence shall be a complete and harmonious one. Thus, a man who had heard of a "tariff as protecting American Manufactures, by keeping out of market the products of foreign labor," was asked what he supposed a tariff to be. He did not know. He knew what it *did*, it kept foreign products out of our markets. On being pressed with the question what it was, he said he supposed it must be a fleet, or gun boat, at least, that was kept at anchor in the harbor to prevent vessels loaded with foreign goods from coming into our harbors. Now, here was the origin of a myth. The meaning of the verb "to keep foreign products out," etc, he understood. But

what a tariff was he did not know. For him, the word was without meaning, and he set at work at once (most writers would say, "*imagination set at work*"), to think of something that could do what had been accredited to the tariff. *He* thought of a fleet or gunboat. In other ages, most likely, some living sea-monster would have been invented to serve the same purpose.

48. Max Müller has made it quite certain that the myths in the early history of mankind, as well as a good many in later times, in fact, came into being in this way. The earliest inhabitants of the earth worshiped One God, without however, any name.* It was said "He dawns," "He thunders," and then dawn and thunder, by abstraction and objectification, were made objects, and worshiped as gods, with other names, denoting the acts or attributes of the nameless Him Whom their ancestors had worshiped, and we have polytheism, the growth of imagination.

49. In the next stage, the meaning of the names of these imaginary deities, having been forgotten, we have imagination again at work, creating in each case a something that could, or would be likely to, do what had been ascribed to these deified abstractions,† and we have as a result a well developed and full grown mythology.

50. Now, this form of mental activity has not ceased and will not cease, however much the advancing culture and the progress of science and exact knowledge, may change the character and detail of the creations which will be the product of such activity. In view of these facts in the early history of mankind, Max Müller has said that "Mythology is a disease of language"‡

* "*Chips from a German Workshop*," Vol. I, page 352, etc.

† "*Chips from a German Workshop*," Vol. II, page 78, etc.

‡ "*Lectures on Language*," 1st Series, page 21,

And in precisely the same use of words I think that what in modern times is called metaphysics is but a "disease of language," also. It begins by objectifying abstractions in the way I have already explained, and then proceeds, as the early mythologists did, by treating these objectified abstractions as concrete realities, *inventing* for them a nature, and ascribing to them acts in the wildest and most reckless disregard of intelligibility and common sense.

LECTURE VI.

INSIGHT AND REASONING.

1. If man had nothing more than sense-perception and imagination he would not rise above the brutes in the scale of intelligence, and it is doubtful if he would equal them. But it is obvious that while they see and are moved by external objects, man sees into and understands them, as brutes do not.

2. The origin and nature of knowledge has afforded matter of discussion and dispute since the commencement of man's inquiries into the nature of himself and of the world around him. It was at first, and naturally, supposed that all knowledge—all ideas—come through sense-perception, and from objects in the external world. But it was soon objected (1) that in that case we could have no thought of, and no name for, any object that is not in its nature perceptible to the senses, and so has the properties of form, color, density, etc., and (2) that since all things appear to the senses to be continually changing, if man were confined to this source or means of knowledge, there could be no absolute truth, or proposition that should be always true.

3. To meet these difficulties, Plato proposed the theory of ideas. He supposed them to be eternal realities in

the mind which were types, paradigms, images and resemblances of external things, and so related to them that while the external objects of any one class or species may differ from one another in mere accidents, and each one might change in its appearance, the idea or paradigm of it which was in the mind, would remain always the same. Or, in other words, the idea or paradigm had none of those accidental properties which distinguish one individual object from another, or one state of any one object from another state of the same object; and hence by looking at it, by an act of intuition, we should have a ground for the assertion of universal and absolute truths.

4. The controversy concerning "ideas," their nature and their origin, and even their very existence, has continued from that time to this. Nor can it be regarded as settled even now, although the number of forms it has taken is well nigh endless, philosophers of one school, called sensationalists—denying the reality of such ideas as Plato's theory implies—and philosophers of another, adducing words and propositions in all languages that imply in man something more than sense-perception. And in the last phase of this controversy, Cousin adduced such words as "time," "space," "substance," "cause," etc., to prove that we have some source of knowledge besides sensation.

5. The argument in regard to the word "cause" will best illustrate the nature of the controversy. With the eye, Cousin admits that we can see the antecédence of one thing, or event, before another; but he contends that we cannot, with the eye, see that particular relation by which we call one object or event the cause of another. And he contends that, therefore, we must have "an idea of cause," either innate, that is, in the mind,

when it is born or furnished *a priori*, as he says, by the mind itself, by means of which we come to know or think of one object as the cause of another.

6. Now I do not believe in the reality of such ideas, or of ideas of any kind, except as the word is abstract, and denotes mere states or forms of mental activity; and ideas, in this sense, furnish no solution to the difficulty. But I agree with Cousin, that with sense-perception alone we could have no such word as "cause," with any meaning different from mere antecedence. And while, therefore, I agree with Cousin in thinking that if we had nothing more than sensation and sense-perception, we should know of nothing but mere antecedence, and should not have any such word as "cause" denoting something more than antecedence, I think it equally certain, on the other hand, that if the word "cause" were derived from a mere *a priori* idea of causation, we should have no such word as "antecedence," and know nothing of antecedence as distinct from causation. If Locke were right, we should have only antecedence and not cause, and no name for it; and if Cousin were right, we should have cause and not antecedence, and no name for it. It is manifest, therefore, that neither theory is wholly correct, since neither of them fully explains the facts in the case.

7. It may be well, however, before proceeding a step farther, to call attention to the fact that in this question concerning the origin of knowledge, and of "ideas," (for knowledge is considered as made up of ideas), we have another illustration of the mischievous effects of objectification, or rather of mistaking an objectified abstraction from a concrete reality.

8. "Knowledge" is clearly an abstract term, whether "ideas" be so or not; and we might with as much pro-

priety and hope of success, ask for the origin of sleep, or of laughter, as for the origin of knowledge. The only answer that the question admits of, is one that relates to the time, the place, the circumstances and the occasion of man's beginning to know. And to ask for the origin of the "idea" of space is the same as asking what first led man to think of space and how he came by the word. So it is also, with regard to any other term that may be thought to imply an innate, or an *a priori* idea.

9. I refer, therefore, to the obvious fact that we not only see objects, but that we see *into* and understand them. This "*insight*" (which is totally different from the "*intuition*" of the German philosophers) is, I believe, at the same time, the foundation of our knowledge, and the solution of the difficulty that has made the controversy between the sensationalists and the idealists. I say it is totally different from the "*intuition*" of the French and German philosophers, for as they use this term it denotes a function or action of imagination or fancy rather than real insight. With them intuition is rather the looking *upon* a thing as real, though not present to the senses, than looking *into* it and seeing its nature.

10. We may well illustrate the difference in the use of the words insight and intuition, and the nature of the function of insight, by the following example: We say that a straight line is the shortest possible line between two points. Now, that there is such line, and that it is straight, may be a matter of intuition or perception. We fancy or imagine or suppose such an one. And this we could do even if we knew that there were none. A line in itself, and as defined by the mathematicians, is an unreality; for there is, and can be no such object in nature. But that it is, or would be, if it only could be at all, the

shortest distance between the two points, is matter of insight. This "*shortestness*" is a property that we could never ascribe to it from mere sense-perception alone. We cannot affirm it on the ground of mere *intuition*; we cannot ascertain it beyond the possibility of error or difference in length, by measuring. But we affirm it absolutely and without qualification or hesitation on the ground of an *insight* into the nature of the line.

11. Let us take another example. We say of matter that it is inert; and on the ground of this property, we lay down and affirm the laws of motion, and on them as a superstructure, we build all of our science of mechanics, astronomy, chemistry, etc. But inertia is not a property that we can see with the eye or perceive by the touch. It is not what is called a sensible property at all. And if we had no faculty of knowledge besides sense-perception, we should have had no such word in our vocabulary as "inertia," and should never have thought of any such property as belonging to material objects. The word "cause" furnishes another illustration of this topic; but as that has already been spoken of, there is no need of anything more being said about it now.

12. We have just said that it is the idea of the property of inertia that underlies and makes possible all of our sciences that relate to bodies in motion and the forces that move them. So also, the idea of cause enters into and makes an indispensable element of almost all sciences. And as the "*shortestness*" of a straight line is a matter of insight into the nature of a line, so all our demonstrations relating to the number and form of objects—that is all mathematics—depend upon our insight into the nature of numbers, form and of figure. We prove, from the nature of a triangle, that the sum

of its angles is equal to two right angles, and from the nature of a circle, that all angles formed in any given arc must be equal and measured by half the rest of the circle.

13. Immediately upon these acts of spontaneous insight, there follow others that are sometimes called acts of reflection,* which are usually the first steps in reasoning. These elementary acts are seven in number, and may be referred to two classes—the one making the analysis, and the other the synthesis, of what are called ideas.

In the analysis, we have (1) analysis proper, (2) abstraction, (3) objectification. And in synthesis, we have (1) judgment, (2) generalization, (3) division and (4) inference or reasoning in the narrower sense of the word.

14. We see objects individually, and one by one. Even if we see many at a time, we see them individually, and as individuals, and not as a class or a group, containing a collective whole. We see objects because they are before us and around us, and because they affect our organs of sense. Hence we think of them as having form and color, etc. But in doing this, we go through a process (or several processes) of which we are but little conscious at the time. In fact, these forms of mental activity had begun and had been formed into habits so quickly and so easily performed before we began to reflect upon

* Reflection, however, is more properly the co-ordinate of spontaneity. When an act of mind occurs without will or choice on our part, as perception when sensation reaches the sensorium, we speak of it as spontaneous, or an act of spontaneity. But if the act originate in, or be prolonged by conscious effort or will, we call it reflection. Such are, in fact, most of the processes of reasoning. We perform them consciously, with purpose, and often with fatigue and exhausting labor.

on them or inquire into them that they scarcely attract the attention so as to make us conscious of them at all.

15. Now to think of an object as having properties, we first make what is called an analysis—a logical analysis—which is distinguished from a physical analysis by two important differences. In a physical analysis, we resolve *the thing itself* into its elementary parts; but in a logical analysis, we resolve *its idea*, merely. In physical analysis, we get elementary parts which we designate by *concrete* terms, as oxygen, carbon, etc., whereas in logical analysis, we denote the results by *abstract* terms, as whiteness, solidity, etc. This doctrine of a logical analysis, and the term “analysis,” by which it is designated, was derived from the theory of ideas already spoken of. In that theory, an idea was supposed to be something in the mind, representing the external object, and *made up of as many parts as the object has properties, each part of the idea either being or representing a property of the object*. Hence, if one should resolve an idea into its parts, which would be a logical analysis, the parts would be the properties of the object, and could, therefore, of course, be denoted only by abstract terms.

16. But, as I discard the theory of ideas, I cannot, of course, accept this explanation of logical analysis, which is based upon it. And if we discard all theories, what we call analysis is merely the act of mind by which we think of objects as white, or red, or solid, etc. The next step is what is called “abstraction.” It is commonly regarded as an act in which we “draw off” one of the properties, in order to make it a separate object of thought. But as no such act can be performed, since no property can be “drawn off,” or separated, from its substance, it is better to define the act that has been called abstraction

as that in which we "withdraw the *mind* from thinking of the object itself, and think of one property alone," and the next step, "objectification," is that process by which we make the property an object of thought, and think of it as something real.

17. That this is really done, and the extent to which it is done, is made evident by the extent to which the figure of metonymy is used in all languages. It occurs whenever we make an abstract term the grammatical subject of an active verb, or the predicate, or object, of a transitive one. Now in speaking of properties as realities, as separable from objects, or as belonging to them, or in fact, as anything in themselves, we are using metonymy, and have already objectified the properties. The very act of giving to a property a name objectifies it, and places it among what the philosophers have called *entia rationis*, as distinguished from *entia realia*, or real substantial objects. Thus, when we speak of *seeing the color* of an object, or *smelling its odor*, we use the abstract for the concrete, and objectify a mere property. What we perceive is not the color, but the colored object—not "the color of the rose," but "the colored rose."

The descending order, or analysis, having been completed, we commence the ascending order, synthesis.

18. In the first place, we have the act of judgment, in which we affirm an adjective connoting a property of a noun denoting its substance, as when we affirm that the "rose is red," "the snow is white," "the ice is cold." This affirmation is made on the ground of the preceding analysis. We know, and can affirm that "the rose is red," because we have seen "the red rose," and have gone through the process of analysis, abstraction and objectification, so as to have thought of redness as some-

thing belonging to the rose, and which consequently, we can predicate of the rose. And having thus obtained the predicate "*red*," we can afterward affirm it of other objects at will. Truly or untruly, as the case may be, we can call any object *capable of color*, red, whatever its color may be. But if we speak of what is incapable of color, as of a virtue or a triangle, a proposition that should predicate "redness" of it, would not be untrue, it would be simply senseless.

19. In the next place, and in a somewhat different direction we have *generalization*.

No property is confined to any one object; the paper is white, but it is not the only white thing; snow is cold, but is not the only thing that coldness can be predicted of. If now we group together or think of, at the same time, all these objects that are white, we make them a class, or a genus, in the technical sense of the word, and hence the act is called generalization. And if we thus put together two or three properties which are always found together in certain objects, we get a general term or common noun by which to denote them. Thus human beings are found to have a certain form, erect, with two feet and two hands, with the use of language, etc., etc., and hence we have the word "man," as a common noun to denote them. And when we use this word we are actually thinking of them by the properties they have in common and by which they are distinguished from all other objects of perception or of thought.

20. In the next place we divide the genera: that is, we see that the objects thus grouped together in a genus, as having certain properties common to them, are nevertheless distinguished into smaller classes by properties which distinguish one part of a genus from another or perhaps several others. Thus having formed by generali-

zation, the genus man, we find that some men differ from others, in color for example. and thus we divide the genus, as it is called, into smaller classes called "*species*" in reference to these distinguishing properties, as "black men," "white men," and perhaps give to them specific names as Negro, Caucasian, etc. And this sub-division we may carry on until the parts will contain no more than two individual objects each. And the species we can denote either by a single word as "Negro," etc., or by the name denoting the sub-divided genus "man" with an adjective qualifying it, which denotes the distinguishing property, as "black" man. If we have occasion to speak of a species often, we generally find a single word to denote it, if not, we content ourselves with the more elaborate form including the name and its adjective.

21. And then in the fourth place we have inference or reasoning, in the narrower sense of the term. This consists in putting together the results of two separate acts of judgment in such a way as that from the two we can obtain a third, differing from them in the connection of two terms in one affirmation, which though contained in two premises were not connected in the same affirmation. thus A is B, B is C, therefore A is C. And it is by this process, in its various forms, that we proceed from the simplest affirmations concerning individual objects based upon immediate observation up to the highest and most comprehensive truths that man ever attains, or that constitute any part of human knowledge.

The investigation of the various forms which this process of inference or reasoning may take, with the laws on which their validity depends, constitutes a science by itself, the science of Logic, and therefore I shall not proceed to discuss them here.

22. There is another relation of objects which by insight alone can be discerned, and that is the relations of objects as *parts in a collective whole*. Every object we see is not only an individual in a class, and that class comprehended in a higher and more comprehending class, until we arrive at a summum genus, which comprehends all things, but each object is also a part of a collective whole, with which it has relations of a different kind. Thus a family is a collective whole, made up of members or parts sustaining relations to each other quite different from those which make them individuals in the mere class of human beings. So a state, a church, an army, all are organized bodies, collective wholes, the relation and nature of which are purely a matter of insight. No mere animal has any thought of such relations. And the comprehension of these relations, and the making of them by grouping the parts into wholes, is in some respects the highest and rarest exercise of human genius. It is what makes the great general, the great statesman, the great architect, the great scholar, etc.

23. If now we regard the properties of objects, as the material or elements of our knowledge, it is manifest that we have a large number given in sense-perception, and hence called "sensible properties," or such as relate to the *nature* of objects, while imagination and reasoning can give only new combination to those elementary properties. And in language we have (1) concrete terms, denoting the things that have substantial existence, etc., (2) *abstract* terms, denoting the properties of such considered as objects of thought, and (3) *general* terms, denoting classes of objects by the properties which the individual objects in the class have in common. Hence an individual concrete term can denote only a

real object, an abstract term, only the property of some real object, and a general term a class of things.

24. But in most all languages there is a process of compounding words to denote objects, as "ink-stand" "sand-bank" and then, by what is called "phonetic decay," one or more of these syllables that make up a compound word are reduced to a letter perhaps and added to another syllable, as for "love-his," we have "loves," for "love-did" "loved." In this way two names may be put together to denote what has never been seen, as "centaur," hippogriff," etc. Or again we may invent words to denote what we suppose to exist in certain cases and relations, words denoting these objects by the process or relation as "remainder," that which remains after a process of subtraction or abstraction; "substance," that which is supposed to exist under the properties of objects and would remain if the properties were taken away.

25. The origin and development of language is instructive in many ways and will throw much light on our present topic. It is conceded as the result of linguistic investigations, that language consisted at first of some few hundred sounds or words, mostly if not entirely monosyllables, each one of which denoted at first an individual, object or thing, and then by generalization, a class of things, resembling in their general and obvious features that one which the word first denoted as an individual. How these words or sounds first came into use we will consider by and by. (Lecture XI.)

26. Leaving out of view for the present all lines of inquiry but one, we will follow the development of names. These primary words, as we have said, denoted at first, and by what is called "first intention," some one, and then some class of, visible objects. Soon, how-

ever, there was occasion to denote invisible objects, real or fancied, and new names and new uses for old ones must be found. Take as an illustration two examples. Man was seen to be different from inanimate things, "wind" went into and came out of his mouth; and hence the first word for that within man, which was supposed to exist and make him different from mere inanimate objects, was called "breath" "spirit" or "wind," the same word denoting the three objects for which we now have three terms. But animals breathe also, and man is different from them—does some things which they do not. How distinguish this difference? The moon had early attracted attention and received a name. It "measured" off the months; it appeared to exercise a discretion or choice in rising, changing its path and its form: it was something, in this, like man, having freedom and *choice* in action. Hence the word "man" and then "mind," as that in man which thinks, and measures and chooses; "moon," "man," "mind," all from the same root, and that root, by a "second intention," denoting the unseen thing, in man, that makes him to differ from all the other objects on earth; somewhat as the moon does from the others in heaven.

27. Again those early thinkers were impressed with the appearance of natural phenomena, and soon believed that there was something unseen behind or beneath them. The Aryan nations were apparently struck with the coming of light, the fall of rain, the roaring of thunder. They said, It dawns, It rains, It thunders, and then they had the noun "dawn," "thunder," etc. They worshiped Dawn as God, and from this root, or rather from the root of this word as we have it in English, came the Greek "Theos," the Latin "Deus" and a name for "Deity" and "divine things," in most languages. The

Semities, on the contrary, were impressed with order, and the power implied in the production of it, and they made to themselves a word, as from "to rule," or "keep in order." "Ruler," as we, from "create," have "Creator."*

28. I have already spoken of objectification, by which abstract names are made from adjectives and verbs, as "whiteness," from "white," "solidity," from "solid," "motion," from "move," etc., etc. Sometimes the root, in the same form, is either adjective or noun, as "mortal," or possibly a verb or noun, as "sacrifice," "walk," "sleep," etc. And it is probable that the first monosyllabic roots were, whether used as adjectives, verbs or nouns, the same in form.

29. The origin of the word "space," is also an instructive illustration. It is from the root "span" (*spando*, in Latin), whence, "expand," then "expansion," "spansion," "*spatium*," "space." And space is the expansion, or "apartness," between two objects. Then we objectify it, and make it be a something that extends between all objects, and beyond them even so far as to be infinite.

30. But we have another class of names that have been made up etymologically. Thus, "sub-stance" is a compound word. If we suppose all the properties of a thing removed from it what would remain? Why, it could have no objective name; for we do not, and cannot know it as an object. It would be only that which "stands under" (sub-stans) the properties, and hence it is called the substance of the thing.

31. Now we have an easy explanation of the origin of words, and of knowledge, in the only sense in which it can be said to have any origin. There are four steps:

* "*Semitic Montheism*," "*Chips from a German Workshop*," Vol. I, p. 337, etc. Scribner's American Edition.

(1) By sense-perception men see things, and give them names.

(2) By insight, they see that there are things that are not seen, and therefore, words that by first intention had denoted visible things, are so used that by second intention, they denote invisible things, as in the case of mind soul, etc.

(3) By objectification (which is purely a function of imagination, or fancy), we make, from adjectives and verbs, abstract names that denote no realities.

(4) And finally, by etymological composition, we create a class of words as "*substance*," "*infinite*," "*absolute*," etc., which are used to denote what we suppose would be the result of certain processes of analysis or synthesis, provided these processes could be performed, or rather assuming that they have been performed.

32. And thus, by recognizing the act of insight into the nature of the objects we perceive, together with the act of perception itself, we can account, by the process of reasoning and the etymological process of forming words, for all of knowledge we possess, and for the existence of every term that is found in any language ever spoken by man. (1) Some words denote objective or physical properties, as color, form, etc., including all that come from sense perception, and these we may call *objective* terms. (2) Another class come from, and denote, only feelings towards objects, as "frightful," "horrid," etc., and these we may call *subjective* terms, as describing the subject rather than the object. (3) Then we have a third kind, or class, which denote the relations of objects one to another, as "distant," "near," "above," "below," etc. (4) And finally, we have those that denote the internal nature of objects, as "inert," "causal," "spontaneous," etc. The first class are the product of

sense-perception, the second originate in our emotions towards objects, the third arise from a comparison of one object with another, and the fourth are due to insight. And these four classes include all that there are.

33. And of course, if this be so, we can account for all the words that occur in any language spoken by man, and for all the elements of his knowledge—all his “ideas,” without supposing either any “innate,” or “*a priori*,” ideas or any “forms,” “*schemata*,” or other things of the kind, furnished to the mind, in any but one of the three ways: (1) sense-perception, (2) consciousness, (3) insight. Words denoting objects thus cognized must be concrete, and denote substantial realities. Words formed by the etymological process we have explained, may denote either (1) nothing, by being self-contradictory, as a by-a-single-line-inclosed-space, or (2) the mere fictions of fancy.

34. It is doubtful whether we ever cognize any object directly by insight. Cousin maintains that we cognize or know, “time” and “space” and “substance” and “the infinite,” etc., directly, by means of *a priori* ideas. Before, however, we can decide this question, we must consider and settle other questions of a deeper character in relation to the nature and reality of what is designated by these terms. But passing by this, as a question which we cannot now dispose of satisfactorily, we may say that insight, as a basis of demonstration, may and does often lead to a knowledge of the existence, properties and attributes of things, which are unseen and invisible by the organs of sense-perception.

The discovery of the planet Neptune is cited as an example. The French astronomer, Le Verrier, noticed some perturbations in the motions of the planet then

supposed to be the exterior planet of our system, which led him to believe that there was another planet outside of it. He computed the place and other elements of the planet, and on directing the telescope to the part of the heavens where his calculations had led him to expect it, it was found. In this case, insight into the nature of motion and its cause—assuming that all matter is inert—led to the discovery of a particular object, as a cause of an observed phenomenon. And the same process that led to the discovery of the object, disclosed its properties also.

35. In the same way, we discover the reality of mind as thinking substance and spontaneous cause, as was shown in our former lecture. We started with the fact that mere matter is inert. We proved from the nature of certain mental actions that the agent, or cause, of them is not inert but spontaneous. Hence it is *something*, in order to be a cause or agent, and it is spontaneous, in order to be cause or agent of such acts as we are conscious of; and, as spontaneity is incompatible with inertia, and as all matter is inert, we inferred that there is, in man, a something, having a nature essentially different from that of any mere mass, or piece, of matter.

36. In the same way, we prove the existence of a Supreme Being, whom no eye has seen, or can see. Not only do the objects in nature manifest cause and design, and thus imply a First Cause and Designing Intelligence, but they exist and appear in a succession, a series, one after the other, as when we say "every egg comes from a hen, and every hen from an egg." It is manifest from the nature of the case, that there was a time when there was either a hen that was not hatched from an egg, or an egg which was not laid by a hen. Now whenever this

occurred there was a cause—a Being outside of, and existing before the series, who produced its first term, or member, in the series, and gave to it its law. And so of all other objects. Hence we come, by exercise of insight into the nature of physical phenomena, to the knowledge of some One who was before all things, who created all things, if not individually, yet generically, by creating the first of the series, and who, as First Cause and Creator, must be eternal, omniscient and omnipotent. His works, also, manifest benevolence, or good-will, to His creatures.

37. I am well aware that this function of insight has not been generally recognized under that name by writers on psychology. It is, however, in many respects, the same as what Brown and his followers have described under the name of "original suggestion." And Cousin and his followers have generally spoken of it under the name of "spontaneity," or "the Reason," meaning, of course, reason acting spontaneously. The reason why it has not been more generally recognized is, I think, to be found in the fact that it always occurs together with either perception or imagination, and so has been confounded with them.

38. As a general thing, we are not conscious of the act of insight as separate from perception and imagination. But there are cases in which we become conscious of it. If, for example, we see an object without understanding it, its construction, its purpose, its design or its use, we pause to think of it—we make an effort to see into and understand it—to "get an idea of it." In such cases, we become conscious of something more than the mere acts of perception and imagination, and this "*something* more" is the act of insight, which undoubtedly becomes intensified, by prolongation and effort.

39. Hence it is obvious that reasoning is but an aid to insight. It is both a confession and a resource of weakness. It is a tedious and toilsome process, creeping slowly and heavily along because we cannot fly. To an infinite mind, all truth is matter of immediate insight; and men differ in all degrees, in the capacity to see into things, from the complete idiot, who has no such power at all, up through the various grades of genius to Him who seeth and knoweth all things. And the quicker and keener a man's insight, the more rapid the progress he can make in whatever he may choose to undertake.

40. Insight, also, seems to have varieties in kind as well as differences in degree; and there is reason to suppose that these differences depend upon something in the structure of the brain, which the further investigations of physiologists will bring to light. Even now there is reason to believe that the anterior lobes have a different function from the middle or posterior lobes. Thus it would seem as if the anterior lobes were the organ for science, the middle, for moral and religious sentiments, and the posterior, for the selfish emotions and the quick cunning of self interest.

41. But in another way, we see differences of insight. One may be quick in mathematics, for example, another in language, a third in construction of implements and the mechanic arts, others in the combination and arrangement of the parts that make a comprehensive plan. But we have at present no means of classifying these kinds of insight. If it shall be found hereafter that different parts of the brain have different functions and are organs of different kinds of insight, just as the eye, the ear, etc., are organs for different kinds of sense-perception, this will doubtless become the ground of one classification of the kinds of insight. Or, if on the other

hand, we could make a good classification of the diversities of insight, that classification would doubtless do much to help discover the diverse functions of the different parts of the brain.

42. There is a law of intelligence, in all its stages, to which I have alluded several times, which, however, must be noticed again here. It is the law of co-ordination as a condition of cognition, and (I believe) of all forms of mental activity.

I have spoken of this law as a condition of the consciousness of sensations. A state of the nerve centres which has not been recently produced, so as to be co-ordinated with the one that just before preceded it, is never a matter of consciousness. So in perception: this follows, of course, since perception is dependent upon and conditioned by sensation. But in sight this law or condition takes the form of simultaneity. The two objects must be seen at once, or neither of them can be seen at all. Suppose the space around us were filled with light of one color only, whether red, blue, yellow, or what not, we should be in the same condition as if we were in total darkness, so far as seeing anything is concerned; and the result would be the same, if instead of there being but one kind of light all the objects around us should absorb all the kinds of light but one and reflect that one in equal intensity; we should not be able to see for excess of light. And as imagination is limited to matter given in perception, the same law must hold for imagination also. We can indeed, imagine, or think of in imagination, one thing without thinking of more than one at a time, but we must think of it by properties, or as possessing properties which we have seen some other objects to possess.

43. But the question very naturally arises whether the

law holds in insight. If as I have maintained, insight is never the means of the *direct* and *individual* cognition of any object, that part of our question may be considered as fairly disposed of, and the question of co-ordination now takes the form: "does the insight of the property imply the reality of such a property?" Or can we by imagination or fancy, supply to objects a metaphysical property which they do not possess? Can we, for example, in thinking of a straight line between two points, see its "*shortestness*," when it is not the shortest; or still better can we think of "*shortestness*" as the attribute of *any* line, whether truly belonging to it or not, when there is no such attribute, and we have had no insight of such an attribute, that can be ascribed to any line, whether straight or crooked?

44. And, in the first place, we may remark here, as in the case of perception, if sensation could be voluntarily produced immediately and without an external object—or if perception could take place voluntarily, and without sensation, sense-perception would be no reliable means of knowledge. So, if insight can be exercised when there is nothing to be seen, it is not insight, or if we choose to call it by that name it becomes "*intuition*," as the French and Germans use the word—a function of fancy and not of insight or knowledge at all. And if this were so, it would be impossible that men should have that confidence in the first principles of knowledge—the self-evident axioms—that they now have. Men could not be made to feel so sure as they now do that the straight line is the shortest always and of necessity,—and always because of necessity. Such first principles do not and cannot depend on observation and induction, without what is called the *a priori* element. There must be an element of insight in sense-perception, or we

distrust it. But at most it can be a ground of certainty, for what has been seen, and scarcely so much as a ground of presumption and expectation, for what has not been seen. With sense-perception alone, one might feel sure that the straight line has always proved to be the shortest; but he could not be, or feel, sure that it would always be so hereafter and everywhere.

45. This fact shows that men, all men, and everywhere, have confidence in insight—immediate, spontaneous insight—as distinguished from fancy (or imagination) and reasoning; both of which are confessedly untrustworthy and fallacious. Without this confidence there would be no feeling of certainty—nothing that we could call, or that would be called, knowledge.

46. I think I have shown in the preceding paragraphs—that there are no words in our language, or in any other, the origin or meaning of which implies an insight of what is an unreality.

But more than this. It is of the nature of cognition that it perceive, but does *not create* its object. Hence, the object must be, in order to be seen. The external object is not only the occasional, but also the formal cause of the cognition. We have seen that there must be diversity of color or shade, and so two objects, in order that either of them may be seen; so that the objects are not only occasions of vision; their difference in color is the formal cause of their being seen to be different. Being the cause, they must be, or exist, before the effect (which is the act of cognition), and therefore could not be created or produced in the act of cognition, whether by perception or insight.

47. This applies, of course, only to the first act of cognition by insight, whereby we distinguish a metaphysical property. As in sense-perception, after we

have once seen a red object, for example, we can suppose another to be red when it is not so. So with metaphysical properties. Having once obtained "the idea" of such properties we may very easily be mistaken and suppose them to exist where they do not. But, as I maintain, nothing except actual cognition by *insight* can first give us the idea of them or any one of them. Thus spontaneity is a property of this kind. And we may be mistaken in ascribing spontaneity where it does not belong, as to the mere instinctive acts of animals, or the involuntary acts of man. But without actual cognition of something that acts spontaneously, we should have had no such word, nor could we, by any possibility, have had the thought which it expresses.

48. There is moreover an important caution to be observed in the application of this law or condition of intelligence, to questions of ontology.

We have already seen that it is possible, in imagination, to combine two or more elementary properties into one, as black and white into grey, for example. Hence the existence and use of the word "grey" is no proof of anybody's having seen a grey object, or of there being one in existence. But as white and black are uncompounded, objects of those colors respectively must have been seen in order that there might be such words. So with inertia and spontaneity; they are simple, uncompounded properties, they must therefore exist; or in other words there must be within the knowledge of man some objects that are inert and others that are spontaneous in their activity, and he must have cognised them as such, either by sense-perception or insight, or neither of the terms could ever have been found in any vocabulary spoken by man.

49. I think that the hemispheres of the brain or the

brain proper, is the organ of insight, just as the corpora quadrigemina are the organ of sight, and that as whenever the effect produced in the sensory tissue reaches the sensorium, perception and imagination take place; so when it reaches the hemispheres, something of insight also occurs. Hence, we should expect, as I believe, that with every act of perception whereby we cognise an external object, something of insight by which we see into and understand the nature of the object, occurs also. In the lower animals, where the hemispheres, and especially the anterior lobes of them, are but little, if anything more than rudimentary, there will be but little if any insight. As the brain develops there will be more. And it is a fact well known to anatomists, that this part of the brain constantly increases in proportion to the rest, as one grows up from infancy to years of maturity.

50. Hence in infancy there is but little insight, and this function evidently increases not only with years and growth of the brain, but also with experience. It is by insight alone that we grow wise, that experience becomes wisdom, that we come to be skillful in any art or occupation, that we meet with success in any pursuit or business; and it is an essential ingredient of that "*tact*," as it is called, by which we can make ourselves agreeable to our fellow-men, or accomplish our purposes among them. Hence all the circumstances by which we are surrounded, and all the hopes of success, become stimulants to the exercise of insight; and under these influences it comes to be a larger share of our mental activity than it otherwise would. And the more complicated the society in which we live, the more advanced the civilization of the community of which we form a part, the more powerful does the stimulating influence that is constantly exerted upon us, in this direction, be-

come. And the brain, like any other organ of sense, acquires a facility, quickness and intensity of action by this constant exercise.

51. But as with the optic thalami, (if I am right in the function which I have ascribed to them) and with the ganglionic centers of reflex action, so with the brain proper and the function of insight ; we can voluntarily stimulate the organ to activity and guide its action within certain limits. The activity of this organ when thus voluntarily produced, is called "reasoning." And here as elsewhere, the two elements, that which is caused by external objects acting upon us from without, and that which is caused by the mind acting from within, are so mixed and blended and so run into one another, that it is not always easy to discriminate them. But I think that with the very first exercise of insight into the nature of any perceived object, certain of the elementary acts into which reasoning may involved, occur also.

LECTURE VII.

APPETITES AND AFFECTIONS.

From the study of the emotions as a matter of physiology, and by the physical method, we come now to a consideration of them as matter of consciousness, and by the psychological method.

1. In this point of view an emotion is any feeling that tends to produce, or result in, action; and we give to the word "action," in this connection, its widest application, limiting it only to muscular action; that is, some action of some muscle, or set of muscles. In this sense, speech is action; for it is produced by the muscles of the chest and throat, etc.

2. And here we may notice another distinction between a sensation and an emotion. We have said that a sensation is any state of the nervous system, originating in the outward extremity of the nerve, and tending *inward*, while an emotion is a state that had its origin within, in the nervous centres, and tends *outward* to the muscles. So now, we see that a sensation tends to produce activity in the nerve cells of the ganglionic centres, and an emotion tends to produce action in the muscles. It is true, as already said, that sensations and emotions pass in and out, along different sets of nerves; but we

have no means of distinguishing these nerves one from another, in themselves considered.

3. I have already, in a preceding lecture, given the psychological distinctions of the following classes, into which emotions may be divided, namely: we have (1) those that originate in the condition of our own body, which, therefore, have no intellectual antecedent properly so called, but only a sensational one; then (2) emotions caused by outward objects, and which, therefore, have an intellectual antecedent which is primarily an act of perception, but finally it includes imagination, at least, if not memory, also; and then, (3) a class which have for their antecedent an act of insight. The two former constitute what is called the animal sensibility, because it is common to man and animals; the latter is called the rational sensibility.

4. And it will be observed that as I have used the word sensation with a comprehensiveness of meaning somewhat wider than it has been customary to give to it, so now, also, I am using the word emotion, in like manner, in a sense somewhat more comprehensive than we have been accustomed to. And I do so in this case, as in the former, for the good and sufficient reason of comprehending in one class all those objects that have their leading characteristics so much in common.

5. In the class of physical emotions, or emotions, of the lowest order—such as arise from mere sensational antecedents, the mere conditions of the body—it has been customary to speak of a part of them, only, under the head of "*appetites*," including hunger and thirst, and perhaps, the sexual appetite. But these emotions or sensations (and we call them sensations or emotions, just according to the point of view from which we regard them) are certainly, in all their essential features, like

the sensations or emotions of fatigue and weariness, of sleepiness and many others that we might name. They are also like the sensations that ensue from any abnormal condition of the bodily tissues.

6. These sensations may arise from either of four causes.

(1) Those which rise from the condition of the organs, and imply a want of something for the preservation of the body. Of this kind, are the examples that have been most frequently cited, and discussed as if constituting the whole class, namely, hunger and thirst. They imply no disease—nothing wrong—but only a certain stage in the process of growth, alimention, etc., at which new supplies become necessary. In this respect, the sense of suffocation, when there is not a sufficient supply of air for the lungs, belongs to the same class as hunger and thirst.

(2) Those which arise from any suspension of the vital functions. And in this class, we have the sense of suffocation, also, as well as the painful sensations which come from the stoppage of the circulation of the blood, as also the stoppage of any of the ordinary secretions, as of the liver, the kidneys, etc. Many of our pains come from this cause.

(3) Then, thirdly, there are many others that come from over-exertion, or over-action, as the weariness and fatigue of exhausting labor. And perhaps we may as well refer to this class those sensations or emotions that come from the opposite condition, namely, from muscular inaction—the restlessness that comes from want of proper exercise.

(4) And finally, we have those that come from any diseased condition of the tissues—the pains of organic lesion, of inflammation, etc., etc., all of which are, at first,

sensations arising from the condition of the tissues, and then become emotions of the excito-motor class, through the reflex action of the spinal cord.

7. Of these emotions, considered psychologically, we have the following characteristics :

(1) They arise from the condition of the body, or some one of its tissues, as a sensation of the general sense, and imply no mental act whatever, as their antecedent, cause or condition. They may exist and produce action when there is no perception and no consciousness of the sensation at all. They are the excito-motor emotions of the physiologists, and have the spinal cord for their centre.

(2) They all continue to increase in strength and intensity—unless some act of relief is performed—until disease and death ensue. Hunger, for example, arises from the condition of the stomach and other tissues, and increases in intensity until death is the result, unless we take food to relieve the hunger. And the same is true of fatigue, or almost any other unpleasant sensation.

(3) They point and tend, as excito-motor impulses, to some act that is necessary for the well-being of the body. This, in fact, follows as a corollary from the former, as is seen in the example of hunger, etc. They all cease with the act to which they lead, as hunger ceases with the act of eating.

(4) The act to which they lead affords pleasure up to the point at which the act ceases to be conducive to health and well-being.

(5) After that, the act not only ceases to be pleasant, but it actually becomes unpleasant and painful.

(6) If persisted in, it will produce both disease and death, just as abstinence itself would have done, if the act had not ensued.

8. I have been speaking of these tissues and their sensations when they are in their normal condition. But here, as in the case of the special senses, already considered, we may have abnormal sensations and false perceptions. Some forms of dyspepsia produce a sense of hunger when there is no real hunger, or cause for it; and so others produce a sense of over-fullness, when no more has been taken than the system has occasion for. And, in general, a diseased condition of the tissues or organs of the body, or of any one of them, will produce abnormal sensations—sensations which are no safe guide to action.

9. And in the same way, the use of many drugs—anything but proper exercise, food and pure air—will produce an abnormal—and an abnormal because a diseased—condition of the tissues, in which the sensations of this general sense of feeling, are wrong, too acute, or too dull, and they cease to be true emotions, warning us what to do and when to cease, in order to promote health and strength, and because of health and strength,—true physical enjoyment. Whether tea and coffee should be included in the above list may be doubtful. But all alcoholic and fermented drinks, tobacco, opium, etc., most undoubtedly should be so included.

10. None of the feelings of this class, or in fact of any class, are directly under the influence of will; that is we cannot control or produce them by merely willing or wishing to do so. In this respect they are like sensations; we can produce and control them only by our influence and control of the means that produce them. We cannot be, or feel, warm or cold, hungry or full merely by wishing or willing to be so. But we have control over the means of producing or changing our sensations in this respect; and the sensations pass over into and

become emotions without wish or control on our part; the whole transformation is mechanical or physical rather than psychological or voluntary.

11. Now the means to sensations of this class are physical. And the means to emotions of this class are physical also, because the emotions have no antecedent but sensation; they have no intellectual antecedent. Thus if we would see an object we must have it placed before the eyes; if we would be warm we must take the means to produce warmth; if we would be hungry, we must wait until the stomach becomes empty and ready to digest food. Hence in some cases, as in the last mentioned, time enters as an indispensable element, in others little or no time or delay is needed. In some cases we can shorten time and hurry on the result by artificial means; as the pain of disease will of course disappear with the disease, but in most cases it may be allayed by narcotics and anæsthetics.

12. And yet the mind has an influence over these emotions.

(1) In the first place the mind may be so much occupied and engrossed with other matters that we are scarcely, if at all, conscious of our sensations or the emotions produced. One may be so occupied with engrossing subjects of thought that he remains for a long time unconscious of hunger, coldness or fatigue, until after the intensity of the mental activity has ceased.

Nor does it seem to be the case that we are merely unconscious of the sensations; they seem to be actually less intense in themselves. It seems as though the nervous activity were a fixed quantity, so that if it be mostly occupied in one kind of thought or feeling it must be proportionally less in others. If one is intensely occupied in thinking of himself, he cannot think much, or

very intently on anything else at the same time. And so if the mind is engrossed with any object of thought, external objects do not seem to produce so much of an impression on the sensibility as at other times.

(2) And so on the other hand, by concentrating our thought upon any one organ or tissue, we are very likely to produce sensations that result in excito-motor emotions. Cases are on record in which persons in perfect health have produced disease and even death by thinking too much of themselves or of some particular organ. In most cases of epidemics it is believed that the disease is generally aggravated by the state of mind that the approach or first appearance of the malady produces. Seldom can we fix our attention upon any organ or tissue for any length of time that we do not begin to feel conscious of some sensation in that organ or tissue, a sensation that may be continued or intensified into a diseased condition. And hence the fact that in many cases, especially during convalescence, one of the most important things to be done, is to divert the patient's thoughts from himself to something else.

13. We have some tissues and organs that seem to be specially under the influence of mental activity of this kind. Among these we may name the heart, the kidneys, and the organs of reproduction. Thoughts that awaken fear or hope stimulate the heart to quicker activity or quiet it into a more moderate pulsation. And examples of mental emotions or trains of thought in stimulating and exciting the other organs named, are too well known by all to need mention in this connection.

14. An increased susceptibility to this kind of influence of the mind over the body is often one of the first symptoms of insanity; and a symptom of it because it is in reality one of the first stages in the disease itself,

a disease which consists in fact, in such a degree of sensibility of some organ or tissue that it cannot be quiet under any of the ordinary circumstances under which there should be quiet. Even Corea, or St. Vitus' dance, is the result of such an increased sensibility of the afferent or sensory nerves of the body, as to keep up most of the time, irresistible excito-motor emotions.

15. As with sensations in general, so with emotions of this class; if continued without change in the cause that produces them, we cease to be conscious of them and they cease to be either sensations or emotions at all in the ordinary acceptation of the term. Hence as we say, we get "accustomed" to that which at first was unpleasant, and cease to notice it. But in many cases the cause not only continues to act: it increases the intensity of its activity, as in the case of hunger, fatigue, etc. And so too in case of disease; the congestion or disorganization in which the disease consists is likely to go on increasing, and thus it will keep on increasing sufficiently to fulfil the conditions of continued consciousness.

16. What are called pleasure and pain are mere qualities and accompaniments of these sense-emotions. A sensation may be pleasant or painful, so too, may an emotion; the pleasure and the pain we cannot explain. But from what has been said of the nature of these mere physical emotions, we should infer that when any sensation produces a state of the nerve tissue favorable to its healthy and normal condition, it would be pleasant, and that by consequence, pain is always to be regarded as indicating that something is going wrong.

17. To this general rule I know of only one exception. It often happens that remedies are painful. When disease or any wrong condition has been produced, the remedy which alone can resist its progress or inaugurate

the process of recovery, is often found to be far more painful, for the moment at least, than the continuance of the disease. But pain may in all cases be regarded as an indication of something wrong; either of a cause of disease at work producing its legitimate effect, (which of course therefore should be sought out and removed), or of a remedy rendered necessary by the disease, which should be patiently borne.

18. Next in the order are the Affections. These differ psychologically from the class just named, in that they have an intellectual antecedent; some act of the mind intervenes between the sensation and the emotion. This act must always be in the first instance an act of perception. We must perceive an object either to love or to hate it—to hope for it, or to fear it. But after some experience we find that emotions of this kind are quite largely influenced by imagination, memory, etc. Emotions of this class coincide with the sensori-motor emotions of the physiologists.

19. In calling these emotions “affections,” I am departing somewhat from the use of terms that is common among writers on Psychology and Moral Philosophy. They speak of “affections for *persons*” and as “having relation to persons,” while appetites, as they say, are “for things.” But I can see no ground for such a distinction in Psychology. As there is a large class, including with hunger, etc. (which Moral Philosophers have called “appetites,”) many others; so there is a large class besides what such writers have called Affections, which have precisely the same psychological characteristics, the one characteristic on which I have classified them, namely, that they are all excited by external objects, acting through one of the five special senses, followed by the act of perception.

20. They have also other characteristics in common.

(1) The act to which they lead does not, like the appetites, hunger, for example, exhaust the feeling, and turn it into the opposite. Thus the kind acts to which affection for a friend leads, rather increases than decreases the affection we have for him.

(2) They are largely matter of education and culture. The recurrence of hunger, for example, has no tendency, in itself, to increase our disposition to be hungry, or our susceptibility to that class of feelings. But in regard to the benevolent affections, we grow more and more benevolent by the habitual and continued exercise of that kind of feelings.

21. The affections may be divided in several ways, and for several different purposes.

(1) They may be regarded as objective or subjective—the objective tending to acts terminating in the objects that excited them, as love, hate, etc., the subjective, on the other hand, terminating in ourselves, as fear and hope: these last scarcely lead us to do anything to the object, but end in merely hoping for it or fearing it. Hope and fear may, indeed, lead to exertion, but the acts to which they lead are scarcely denoted by transitive verbs.

(2) Again the objective affections are either benevolent or malevolent, according as they lead us to do good or evil to their objects. And these two varieties are again subject to subdivision, as benevolent, into love, gratitude, pity, etc., and the malevolent, into anger, envy, hatred, resentment. etc.

(3) And then, for many purposes, hope and the benevolent affections are to be classified together, and fear is to be classified with the malevolent affections. Hope and the benevolent affections are always pleasant

in themselves. They are conducive to health of the body and to vigor of mental activity; while fear and the malevolent affections are the reverse of this in all these respects. They are painful in themselves, and paralyzing in their influence upon the intellectual powers. It is indeed true, however, that they sometimes excite one to a phrenzy or paroxysm of exertion in which the powers of doing and of enduring seem to be increased by the passion, as in some forms of insanity.

22. I am inclined to think that in the early stages of infant life, these classes of affections are not more than two—that the distinction between love and hope, fear and hate scarcely makes its appearance. Every object perceived excites an emotion of the sensori-motor kind, which is either pleasant or painful. The pleasant emotions, at first, take the form of mere attraction, and after that, as thought and reflection ensue, they become hope, or love, or gratitude, pity or compassion, etc. But in regard to the other class, I think that the first form of the affection is merely that of repulsion, and then, after reflection and thought, we come to hate and fear what has excited the repulsion. There can be no doubt, I think, that we often come to fear and hate, perhaps hate rather than fear, whatever has often excited our anger.

23. In adult life, our affection towards things depends upon what we call our “idea” of them; that is, it depends upon what we think them to be. Hence, that which at first thought excites fear may, on further knowledge of the object, and more thought about it, become an object of hope and pleasure; or the reverse, objects of hope become objects of fear. Thus, “we learn” to love what we once hated, and objects once loved may come to excite only hatred.

24. And in this fact with regard to the affections, we

have more immediate control over them than we have over the appetites, or mere physical emotions. It is true, indeed, that we can neither love nor hate, hope nor fear merely by willing to do so. In the case of the physical emotions, we can produce a change only by resorting to physical means, and changing the cause of the sensation. In the case of the affections, on the contrary, we can change their character simply by changing our thoughts concerning the objects that excited them. That which pleases us is apt to set the mind at work in imagining excellence that nobody else has seen or found, and so, on the other hand, if an object displeases us, we are apt to ascribe to it defects and deformities that do not belong to it.

25. Nor is this all. By the voluntary direction of our thoughts we can change love into hate, or the reverse, without any increased actual knowledge of the object. There is probably nothing—person or thing—so bad that something may not be thought or said in its favor. Milton has managed to excite some sympathy, at least, for Satan, and his descriptions of that incarnation of evil has induced in more than one breast—I remember the cases of Sterne and Burns—a hope, or “a wish at least,” that even he might come to good at last. If, now, we will fix our thoughts upon that which may be said or imagined concerning any object—for or against it—we can change our affections towards it almost at will, and love or hate, hope or fear, as we may take a fancy to do.

26. If, however, we are constantly in contact with the object, it becomes more difficult to ignore reality in the mere acts of imagination. It is difficult, if not impossible, to love that which displeases and annoys us whenever we meet it. And quite as difficult is it to avoid

loving what pleases us, or produces only pleasant emotions, of whatever kind, when we come into actual contact with it, however unworthy of love we may know it to be.

27. The physical emotions, as we have seen, are designed for our bodily, or physical, welfare. They are intensely personal, and are apt to become selfish. My hunger is to notify me when I need to take food. It has no regard to or for anybody else. His hunger performs the same office for him. It is not so with the affections. They are intensely social and have regard to, and for, others. Hence a reason for another important distinction between them—a distinction founded upon a difference which we observe in fact, namely, that while the recurrence of any active state in the mere physical emotions does not seem to affect the susceptibility to emotions of that kind, the case is different with the affections. Susceptibility to hunger does not increase from day to day, in consequence of the act of eating. But susceptibility to an affection does increase by repeated acts of affection. The man who cultivates benevolent feelings becomes more benevolent, and is more easily affected by objects calculated to excite feelings of that class. So, too, with fear and hate.

28. We can also decrease our susceptibility, by the opposite course. One can harden himself against all benevolent and generous impulses. He can steel himself against fear. He can, in fact, settle down into a life of mere physical emotions, and care for other things and other persons only as they minister to his comfort, or disturb his ease, until he would sacrifice all persons and things to himself without so much as a single thought that the universe, and all that is in it was not made for him, or has any purpose in existing but to minister to his pleasure.

29. In view of this, it has been held by some authors that in the case of the affections, at least, the susceptibility to their active, or emotional states decreases with each recurrence. And in proof of this, they have cited such cases as those of the soldier and the surgeon, who experience, at first, sensations that do not occur in any subsequent experience of their professional duties. And while it is doubtless true that familiarity with many classes of objects and scenes is accompanied with, and perhaps, in a sense, produces indifference towards them, this is not universally true. Fear as well as hate sometimes becomes a phrenzy, passing into uncontrollable paroxysms, increasing in intensity with each occasion of their excitement. So with the benevolent affections; that which pleases us whenever we meet with it, grows upon our affections, and the more we see and know of it the better we like it.

30. I think, therefore, that the cause and explanation of this phenomenon cannot be found in any mere change in the sensibility. It is to be found rather, as I think, in the intellectual antecedent to the emotion. The soldier and the surgeon, for example, have *thoughts* about what they are doing, on the first experience of the duties of their respective callings, which they can never have on any subsequent occasion. The soldier's idea or estimate of his own personal danger when on his first battle-field, is very different from what it will ever be again, and thus, as the intellectual element changes, so also, does the affection of which it is the antecedent—changing, in fact, not only in degree, so as to produce more or less of fear, if that be the feeling—but even changing in kind, so that from fear we may have hate, love, etc.

31. Nor is this all. We should here recall a feature of the sensibility, which we have already had often un-

der consideration, namely, that any sensations after they have continued for a considerable time, or after we have become accustomed to them, are less—we become less conscious of them. And thus we grow more free, or we are capable of more freedom. That is, at first, our emotions and mental states are more at the control of things around us, in order (if we speak of the final cause or purpose of the arrangement), that we may be sure to take note of them—see them as they are, and act accordingly. But after this introduction, mere physical emotions are less conspicuous, less impressive, less controlling; and thought, which we can direct and control, becomes the more controlling element of our actions; and we are now free both to act as we choose, and choose how we will act.

32. One fact more. Although the act to which an affection leads does not exhaust the emotion, of itself, and necessarily, as in the case of the physical emotions, yet a long continuance of the activity of any affection, especially if the activity be very intense, will produce exhaustion of the nervous energy, and thus a diminution of the intensity of the feeling, and even a tendency to its opposite. For the excitation of any feeling, after the susceptibility to it has been exhausted, becomes painful, and thus, by a law we have already considered, tends to produce a reaction to the opposite extreme. Intense hate, overdone, if we may so consider it, will often turn into love—not necessarily by a process of reasoning, or thought; but simply for the physical reason that its continuance has exhausted the susceptibility to it, and produced a state of the system in which its opposite becomes pleasant; just as the cooling breeze is pleasant to one that is over heated. But, of course, the change will be most frequently in the other direction, from hope to

fear, from love to hate. Exhaustion itself is an unpleasant sensation, and that which pleases us until it exhausts our capacity to be pleased, will become an annoyance and a nuisance, if it continues longer to intrude itself upon our notice.

33. There is one other topic, which is not of a nature to be treated freely in such a place as this, which, however, belongs to our general subject, and is less understood, and of vastly greater importance than is generally supposed. I refer to the sexual appetite, as it is called. And it is called an "appetite" because it partakes largely, and has in fact, hitherto been supposed to partake, exclusively of the nature of the mere physical emotions. But it manifestly partakes of the nature of an affection as well.

34. There is great difficulty in studying this class of emotions, for the reason that, in animals, we can know nothing of their manifestation except what we infer from their acts; and in human beings, while the external acts, which we cannot but regard as manifestations of this feeling, are, in many respects, quite different from the manifestations of the same feeling in animals below man, there is great difficulty of another kind, in studying this class of facts in human psychology.

35. The first great difference, or fact, to be noticed is the difference between the human and the mere animal female. In animals, the feeling is doubtless purely excitomotor, occurring at only rare intervals—intervals so far apart as to include, in mammals, both gestation and lactation. And the recurrence seems to depend upon the production of ova in the ovaries. Hence it does not begin, or rather the animals do not become susceptible to it, until they have attained some good degree of maturity; and it ceases after the physical vigor has so far

abated, by either old age or disease, as to render the reproduction of healthy and vigorous offspring impossible.

36. In the males, however, it is different. The appetite is indeed largely excito-motor. It begins only when the organs of reproduction have attained their growth, or nearly so, and ceases with the infirmities of either age or disease, and would doubtless be excited by the very process of the activity of the organs, even while the animal is entirely alone, and removed from anything that could act as a sensori-motor influence. But the observed facts indicate, too clearly to leave room to doubt, that external objects, and especially the presence of the female of the same species, and particularly if she happens to be in her "*heat*," does act powerfully, in exciting the feeling in question. And this influence can be only of the sensori-motor kind, by sight, etc., and therefore, it is an affection.

37. Hence this class of feelings must, and as we see they do, obey some of the laws of both classes of feelings, appetites and affections, as we have described them. And they disobey or violate others.

(1) Like the excito-motor, they increase, in intensity, up to a certain limit only, but unlike the mere appetites, they cease and disappear when they are not gratified.

(2) In human beings, at least, by a diversion of attention and the occupation of thought with other things, they can be almost, if not wholly, prevented from occurring at all. And when in the state of its most intense activity, the animal feeling is instantly quenched by the excitement of any other feeling, such, especially, as anger, fear, hate, etc.

(3) When indulged beyond the legitimate use for which they were designed, like the appetites, they change into their opposites. And I have no doubt that much

of the matrimonial unhappiness in the world arises from a neglect of this law ; lust, by excess of indulgence, passing over into aversion and disgust.

(4) Their gratification being primarily designed for the perpetuation of the race, and not the health and welfare of the individual, gratification is not only not conducive to health or strength, but is always, and on all occasions, a waste of strength, enfeebling the body, and predisposing to, if not actually producing, disease, when carried to any excess.

38. I am inclined to think that, in the human female, until after marriage, or what should be a marriage, "love," as it is called, is always, and only, and purely, an affection ; made doubtless more intense by the susceptibility to the excito-motor element, which, as I believe, with proper training and control of her thoughts on her part, can, be excited only by personal contact, such as no female should, and no modest female, will allow. But after marriage, it doubtless stimulates the affection for the husband, as an affection purely, to a degree of intensity that no mere affection could otherwise have ; and makes her feel as though the society of her husband was indispensable to life, as much so as even food and air—the food she eats or the air she breathes,

39. But in man, it is in many respects otherwise. Like all animals, there will arise, from the very activity of the organs, as soon as he has reached the age of puberty, an excito-motor emotion, which, as such, is mere "lust," though he may mistake it for love. But the society and presence of some one who pleases him may awaken an affection which will subordinate the lower emotions, and thus elevate and purify the combined result, and it may even take such a form that, for the affection's sake, he will forego "lust" altogether.

40. If now this mere animal element be kept under proper restraint and control, it will, as in the case of the female, intensify the affection into a force which no other affection ever has; and the woman whom he has chosen and treats as his honorable wife, becomes, in the estimate of his feelings, as indispensable as he is to his wife that he loves, and who loves him in return. But the moment he allows in himself improper thoughts of any other woman, or any other woman to awaken the pleasant emotions, which the *one* alone has thus far given him experience of, the intensity of his love for her has become diminished—it is being dissipated—the sacredness of the marriage relation has been violated, and she has ceased to be felt to be a necessity to his home and his happiness, and his life is but a fraud and a cheat upon her ever afterwards.

41. And it is manifest, also, that nothing so tends to diminish and exhaust the affection, leaving in its place only the susceptibility to the mere excito-motor elements, as excessive indulgence; and the appetite, when thus treated, soon becomes turned into disgust, and the affection which should have been love, becomes contempt and not unlikely hatred, as well.

42. This is manifestly a subject that requires to be treated with great delicacy and caution. But a correct knowledge of it is essential to the understanding of the relations of man and woman in society, and to the parts they have played in history. With *man* the feelings towards woman *may be* mere appetite, without affection, in which case, it will, of course, be exhausted by the act of gratification, and cease altogether for the time, and perhaps, so far as she is concerned, forever. In *woman*, it is never mere appetite; it is always, and *chiefly* affection—affection produced, perhaps, by her susceptibility

to the appetite—and the gratification, so far from exhausting the affection for the person of the man, probably never fails to increase it, an affection, however, which a sense of wrong may turn into bitter hate. And in this diversity of the two, is the key that unlocks much of the mystery in the relation of the sexes.

43. It is instructive in another way. It shows that man and woman can never be *practically* equal in the control of affairs. She must of necessity be subject to his control—except as she controls him through his affection for her—no less in consequence of this diversity of their emotional nature than in consequence of “the heavier muscle, the larger brain and broader chest,” by which he must prevail in any struggle that is to be decided by mere physical or mental prowess. Inferior, in one sense, she unquestionably is. But she is as unquestionably superior in another—in quickness and delicacy of perception. She can never be merely and practically the equal of man, as one man is, and may be, the equal of another. Inferior in strength, and “subject,” by the very nature of her affections, she can control him, and through him, the affairs of the world only by the influence she acquires over him.

44. I have spoken of the appetites or excito-motor emotions as designed to give us notice of the condition of the body, with a view to the preservation of health, being painful when wrong is being done, and pleasant when we are doing what is needed for health and recovery. In like manner the affections, or in their more elementary forms, the sensori-motor emotions of love and hate, are designed to guide us to, or in, our social relations. And, as in the case of the excito-motor instincts, they can be relied upon only while the body and its tissues are in a healthy and normal condition, so

with the sensori-motor, or affections; in the normal and healthy condition of the soul, we love, are attracted to, and are led to surround ourselves with, those objects, persons and things that are good for us and beneficial to us, and we are repelled by and led to hate those that are injurious.

45. This instinct is a perfect guide to animals and their only guide. With man it is less so for the twofold reason, first, by the possession and exercise of reason, this, like all other instincts, becomes less active and trustworthy; and secondly, and chiefly, because we have, to such an extent, acquired cultivated tastes, (many of them good, doubtless, but some of them bad) that the natural instincts have become corrupted, and in many cases totally replaced by those of a very different character. But still they are to some extent both theoretically and practically a guide, and by the promptness of action which is characteristic of their nature, they save us many an hour of wrong thought, doubt, uncertainty and hesitation.

46. The instincts which guide both men and animals in the selection of their food are clearly of the sensori-motor kind. The pleasant odors which induce us to put some things into our mouths, to cast others from us, as well as the tastes or flavors of some which induce us to swallow them, and to spit out others after we have taken them into the mouth, are among the most important of all our instinctive guides; and if we will but keep ourselves free from the debasing influence of drugs, stimulants, narcotics, condiments, etc., they are among the safest and most unerring of all the instincts which either man or beast can possess.

LECTURE VIII.

RATIONAL EMOTIONS.

Man's insight into the nature and significance of things gives him a higher class of emotions than those we have already considered. Hence while the two classes considered in the last lecture constitute what we call the Animal Sensibility, those of which we are now speaking constitute what is called the Rational Sensibility.

1. I have treated sensation as purely physical, and emotion thus far, as largely so ; that is, as mere states of the material organism, and more especially of that part of it which we call the Nervous System. But with regard to the Rational Sensibility it seems to be in a measure, at least, otherwise; for although the emotions depend upon and vary with the condition of the nerve-cells, there can scarcely be a doubt that these conditions are rather *results* of mental states than *antecedents* of them.

2. To explain what I mean I must recur to an illustration I have already used several times. A sensation is a state of nerve-cells produced by an external object. This sensation, as we have seen, may become a state of the nerve cells in the spinal axis or the sensorium, which we call an emotion ; and as such it may extend down the efferent nerves and produce muscular contrac-

tion. In *this* case the condition of nerve-cells in the ganglionic centre is a *result* of an external influence, and the *cause* of the acts of perception and consciousness which for the most part ensue. But on the other hand we can, without any such external cause, produce the same state of the nerve-cells, voluntarily, and be willing to perform the act to which the emotion, by mere excito-motor influence, would lead. In this case the cause is within, and the mental state itself is the cause of the condition of the nerve-cells, and not a result of it.

3. Now precisely such, as I think, is the case with the rational emotions. It is indeed true, and a fact beyond dispute or doubt, that we have a class of reflex emotions produced in the hemispheres of the brain by external objects called as in a preceding lecture, *ideo-motor*. These are results of external objects, and as such they are causes of mental states. But I think that in case of the rational emotions the soul itself is the centre and seat where some of the emotions have their origin, and as such, is itself the cause of the state of the nerve-cells in the brain, which constitutes the physical condition and antecedent of emotion, just as external objects cause the sensori and excito-motor emotions in the other nerve centres.

4. It is undoubtedly very difficult to decide precisely what is the nature and extent of *ideo-motor* emotion *as caused by external objects*. I am inclined to think that it is limited to the two functions, (1) imitation of acts which we have seen performed (including the imitation of sounds we have heard), and (2) the performance of acts which require the co-operation of more than one limb or set of limbs, and whenever the condition of the system, either as excito or sensori-motor, requires the act to be performed.

5. That some animals, and all men manifest this impulse at imitation is manifest. Among birds we see it conspicuous in the mocking bird. The domestic dog has changed the character of his "bark," (it is commonly held) out of an effort to imitate the voice of his master. Imitation of actions is a conspicuous feature of all the ape family. And in human children it must have attracted the attention of all careful observers. And I suppose that each of us have on one occasion or another been surprised at finding himself while intently observing some musical performer, actually imitating with hands or feet, head or body, the acts we were observing, although altogether unconscious of the imitation until after it had been going on for some time, and something had aroused us to self consciousness and a sense of what we were doing. And in this I think there must be something more than mere sensori-motor emotion; the sensori-motor emotion is not strong enough in such cases to produce the result alone; and the action is often in limbs which are not *directly* connected with the excito or the sensori-motor centres in which the nerves of the organs of sight and hearing terminate.

6. In the same way there may be states of the body, which are in themselves only sensations of the subcutaneous tissues, and which can lead directly and immediately to excito-motor actions only; which, nevertheless, produce a tendency to actions involving a much more extensive use of the muscles than the mere excito-motor emotions could control. Suppose one hungry, fatigued, sleepy, etc., the condition leads to more than the mere act of eating, sleeping, etc.; it leads to those acts which are preparatory to sleeping, rest, eating, etc. Sleepiness, for example, inclines one to make his preparations for retiring, as well as to sleep when he is in his bed and ready

for it. The bird not only prepares her nest before laying her eggs, but in some cases the female prepares food, etc., for herself and her young. Now without denying the voluntary element in all these cases, in man, there is manifestly an emotional element also, which is dependent upon and arises out of the condition of the body; which, however, is more than mere excito-motor, since excito-motor emotions influence only the muscles that are supplied by the motor fibers that arise from the centre in which the sensory fibres that carry up the antecedent sensation, terminate.

7. It is very possible also, that what are called the *constitutional* instincts of animals are of this class. Thus it is found that if the eggs of a duck are placed under a hen for incubation, the young ducklings run to the water and betray their aquatic instincts none the less for having never seen the parent duck plunge herself in the water. If this be the true explanation of this class of phenomena, then by generalization we have the fact that what is called constitutional character, or tendencies, the various indications of genius, as well as the eccentricities of mediocrity, are of the nature of ideo-motor impulse determined by a peculiar structure of the brain and other bodily organs.*

8. As has already been remarked, and as I have implied all along, it is hardly possible that one of the three great nerve centres should be active without activity in the others. Hence a sensori-motor emotion is hardly possible without both an excito-motor and an ideo-motor *by "sympathy,"* as the physicians say of certain forms of disease. And either an ideo-motor or a sensori-motor emo-

*See MAUDSLEY, "*Body and Mind*," p. 73 and following, for some important statements of the influence of other organs than the brain on the forms of mental activity.

tion must pass into the spinal cord, and so become in *form*, if not in name, excito-motor on its way to the muscles and limbs of the body where it is to produce action. And so, conversely, scarcely can an excito-motor emotion exist, in the healthy condition of the body, without ascending to and involving the brain in an ideo-motor action. And all my inquiries lead me, more and more, towards the conclusion that while the cerebellum is but a reservoir and intensifier of power for the spinal cord, and the excito-motor emotions, so the cerebrum or brain proper in all vertebrates below man is but a reservoir and intensifier of power for the sensori-motor emotions.

9. In man, however, with insight, (for I doubt if animals have any insight) the hemispheres become the organ of those reflex emotions of the higher order of which man, by his insight becomes capable. He has feelings excited not by the mere sight and outward appearance of objects, but by his insight of their nature and his knowledge of their relations, what they are, what they signify and what they imply. In this view the centre of ideo-motor emotions is enlarged in its capacity and range of feelings by insight, just as the seat of the sensori-motor emotions would be enlarged for a deaf man by his becoming able to hear, or for a blind man by his becoming able to see. It would not create a new class of emotions, in the classification we have been using all along; but it would extend the sphere of the class and create a new variety in it. And what is thus the highest organ in animals, becomes the organ through which, in man the mind or soul, to use a common expression "*operates*" the body.

10. In man, these higher emotions seem to be of two kinds, (1) one arising from within, and without intellectual antecedent, and (2) the other excited by external objects. Of the latter kind, are all the æsthetic emo-

tions and the moral feelings. They imply external objects indeed ; but they imply more than mere cognition. They imply more than is sufficient for a sensori-motor emotion. They imply insight, at least, and, for the most part, reasoning, also. They are analogous to the affections, but they are not affections.

The other class, those that arise without intellectual antecedent, are analogous to the appetites. They have no intellectual antecedent. They arise from the soul—from its very nature. They have been called “mental desires.” They might be called “soul appetites.” The second kind named above, together with “desires,” in the proper sense of the word (to be discussed in lecture XI), are of the nature of ideo-motor emotions, and must be considered as belonging to that class. The first named class, “soul appetites,” if we may use the name, seem to be different from the ideo-motor emotions. They can hardly be considered *reflex* emotions in any sense, though doubtless they arise without will on our part, and influence the brain to the production of action, precisely as any reflex emotion does.

Of this class, which may be called the *subjective* rational emotions, I should reckon four varieties.

11. I should name, first, the desire “to live,” as of this kind. It is not merely a desire for continued conscious existence, but for well-being and happiness as well. That such a feeling is common to all men, and so strong as to be ineradicable, admits of no doubt. It can hardly, like an affection, be the result of experience, although it does not take any very definite form until after experience and reflection. And by that time, it has been so much modified by our mental activity that it has become almost impossible to say precisely what it was in its primary form. But in this respect it is like hunger. Suppose a

man in full possession of his powers, but so recently brought into existence as not to have experienced the sensation of hunger, and the relief that ensues from eating. It is certain that all there would be of it, would be a strange, undefined and uncomprehended sense of uneasiness, instead of the defined and expressible feeling we now have and call hunger.

12. I am inclined, also, to reckon, *secondly*, a desire for society and social relations, including love of approbation and the respect of others, on which all the happiness of social relations depends, as a variety of this kind of rational emotions. I think it analogous to the appetites rather than to the affections. And as confirming this view, we may notice a difference between this desire for society and personal affection. Affection naturally enough disposes us to seek the society of those we love; just as a sensation of hunger disposes us to take food, a sensation of coldness disposes us to seek the means of warmth, because of the pleasure they afford us. But we see the influence of this rational desire in those cases in which, for the sake of society, and rather than be alone, we seek the company of those we do not love, and who afford us no pleasure of the kind of which I have already spoken, as the cause of permanent personal affection. I doubt if there is a person living, who is not idiotic or insane, that would not occasionally meet and associate with the person that is of all others most hateful rather than to remain permanently and forever without the sight of a human form or the sound of a human voice. It is a case of the soul appetite for society, triumphing over and overcoming personal aversion.

13. I am disposed to reckon as a *third* variety of this class of emotions the desire of having, or of ownership, out of which arises the institution of property. Doubt-

less, this, also, is greatly modified by reflection and experience, long before it becomes a matter of study and analysis ; for as it is represented in our own consciousness, we have learned, before any such examination of the feelings can take place, that we need much to satisfy our wants, that it is painful to be dependent upon others, and still more painful (for some persons, and in some respects, at least), to be without what we need, as a supply of food and necessary clothing for the future. But the desire to have, manifests itself early, before any distinct or definite notion of property, or of the possibility of future wants, can have been formed. And all through life, we see the desire manifested in getting possession of that which can never be of any use to us. There is not only a pleasure in having, but also in *owning* without any definite idea of *using*, many of the articles we seek and prize.

14. And I think that the desire of freedom, or love of liberty, is another of these innate or mental desires that have their seat and origin in the very nature of the soul. The capacity to think is always accompanied with the desire to think for one's self, and the capacity *to think for one's self* is inseparable from the desire *to act for one's self*, and in accordance with his own thoughts, opinions and judgments rather than to be obliged to do the bidding and mere pleasure of another. The mere desire to be free from restraint, free to pursue ease and self indulgence, is another and quite a different feeling. It is of the lowest class, the mere physical, the excitemotor emotions, which have reference only to self, to mere ease and comfort. But the love of liberty, freedom of thought and action, that I speak of, is of a higher kind. It is that love of liberty, which, so far from seeking ease, pursues and is willing—for the sake of opinion

and convictions of truth and duty—to enter the paths of conflict, and, if need be, to brave even the perils and sufferings of martyrdom. It is no pursuit of ease and self-indulgence. It cheerfully and freely sacrifices such things for the highest privilege, the most sacred right of manhood—the right to do as God does—think and act for himself.

15. I think that the emotions of this class, including these four varieties, are the “appetites of the soul,” if we may so call them. They conform to the two most essential features of appetites. (1) They have no intellectual antecedent, but arise from the very nature of the living condition of the soul. (2) They lead to acts, which, while they afford gratification in themselves, are also necessary to the well-being of the soul, and to its existence as a rational and responsible agent. It is indeed true that, belonging to the soul, rather than to the body, they have not *all* the peculiarities of the bodily appetites enumerated in a preceding lecture. They do not, like physical hunger, for example, increase in intensity, unless gratified until they produce disease and death. But the act to which they lead not only affords pleasure, but it also exhausts the emotion, and produces the quiet of satisfied desire, for the time. It may be that none of them can be carried to the excess of surfeit and disease; although they may all be indulged to an excess that is injurious to the individual himself, and painful to those that make up the society in which he lives.

16. That we do not make these feelings matter of reflection and critical examination until after there has been an opportunity for an intellectual antecedent, is beyond question. But I think that we can show by a demonstration founded upon their very nature, that they

must have been in existence before any such antecedent, and therefore, could have had none. Take the example of any one of the affections, love, hate, hope, fear, etc., they all imply an object; they are adequately expressed only by transitive verbs which take after them concrete nouns, denoting the object of the affection, which is, in fact, the thing that excited it, as "I love John," "I hate Peter." But the appetites, as already said, are all expressed by intransitive verbs, as "I am hungry," "I am tired," etc. So with these desires, they are all expressed by intransitive verbs, or which is the same thing, verbs that take abstract nouns, or verbs in the infinitive mood after them, as "I desire to live," "I desire society, or to be in society," "I desire to have control," "I desire to be free," etc.

17. Now this fact is conclusive; for the difference in the form of the expression by which these emotions are expressed, are, in my estimation, decisive of the difference in the nature of the facts of consciousness expressed by them. In an affection, the object is first in the order of time; it is thought of before the affection is produced, and is regarded as the cause of it. It "affects" me, and therefore, I call the feeling an "*affection*" and if I wish to make myself the grammatical nominative, as "I love," "I hate," etc., I must, in order to express the fact of consciousness fully, introduce the object which caused the emotion, as "I love John," "I hate Peter," etc. But in the case of the appetites, there is no intellectual antecedent, no consciousness of a preceding sensation, or mental act. It is itself the first thing that we are conscious of, and hence, we think of it as a state or modification of ourselves, and denote it by an intransitive verb, as "I hunger," or "I am hungry," "I am tired," etc. And so it is with the mental desires.

18. We may point out one further fact worth considering. We have seen that pleasure and pain are largely, if not wholly, matter of the mere physical feelings. A sensation may be pleasant or painful, and whether it is the one or the other, is doubtless dependent upon the fact whether the sensation be one that is, in general, conducive to the well-being of the tissue or not. And for the same reason, the benevolent and hopeful emotions are pleasant, while those of an opposite character are unpleasant or painful. But even in this case, the pleasure and the pain are purely physical, while the affection itself belongs to the class next above the mere physical feelings, and they result, as in the former case, from a tendency to produce, if painful, a diseased condition of the nerve tissue, while, if pleasant, it is because they tend to its healthy and normal condition.

19. So with the two kinds of rational emotions. Beauty and right, please us because they tend to the healthy and normal condition of things. We do not hesitate to say that every object should be beautiful and every action right. We take a pleasure in contemplating those that are so, irrespective of any utilitarian view. There is a satisfaction in such things, like that which we find in the melody and harmony of musical sounds. They soothe and quiet us. Perhaps for this very reason, they have led many philosophers to make this state of feelings the sole test of truth and beauty. But be that as it may, the fact is indisputable that there is a harmony between the rational appetites, as I have described them, and those outward conditions of objects and actions, which, by a process of reasoning independent of feeling, we can show to be right and in harmony with the general principles on which the welfare of the great whole which we call Universe, depends.

20. I think that we are authorized to call this class of emotions *rational* emotions, or perhaps, better still, *mental* or *spiritual* emotions, as having a seat and origin in the soul, or mind itself, and therefore, implying something more than a mere physical organization. We can understand, on purely physical or pathological grounds, how, for example, any object that is either very cold or very warm, should produce unpleasant sensations, and thus be either pleasant or painful. We can also understand how an object that excites hope or love should produce pleasant emotions rather than those of an opposite character; and that, too, regarding the pleasure and the pain as purely physiological phenomena, resulting from the different conditions of the tissue. Love and hope make the heart beat and the blood to flow freely. But we cannot conceive how any one of the conditions, which I have treated as mental desires, can produce either pleasure or pain in the bodily organism. I cannot conceive what connection it can have with the bodily tissues, except as a *result* of a mental condition. A mere body that should be sensible to heat and cold, to attraction and repulsion (and these, it will be remembered, are the two primary forms of the affections), is conceivable. But a mere body that should have love of life, of liberty, of society, and of possession, is certainly quite inconceivable.

If now we pass to the consideration of those rational emotions that have, and depend upon an intellectual antecedent, which, for the sake of distinction, we may call the *objective* rational emotions, we find that they are of four classes, also, which we may call respectively *Æsthetic*, *Ethic*, *Theistic*, or religious, and *Reflex*, or those that arise from self consciousness and the thought of self.

21. The *Æsthetic* emotions are those that are awak-

ened by those objects that we call beautiful, sublime, etc. In one sense, they are scarcely emotions at all. They are more nearly akin to the sensations of the special senses, as the mental desires, or subjective emotions, already named, are analogous to the sensations of the general sense. But as the mental desires imply something more than mere bodily sensations, so the æsthetic emotions imply more than mere sense-perception. We must not only see an object with the eye, but we must see into it in order that it may awaken the emotions of joy and admiration which we feel only in the presence of objects that we agree in calling beautiful. We have no reason to suppose that any creature in the animal kingdom below man has any appreciation of beautiful objects, as such, or any emotions of beauty.

21. Much has been said as to the origin and nature of these emotions, and the object to which we apply the adjectives, "beautiful," "sublime," etc. Do we call them beautiful because they are so, or because of the feelings which they excite in us? Is beauty an objective property? Or does the word denote only a subjective emotion in the beholder? Do we call them beautiful on account of what they are, in themselves, and in their relations to other objects, or merely because of their effect upon us? Both views suggested by the questions are maintained by writers of different schools. Some hold "that beauty is," as they say, "in the objects themselves," and others, that it is only in the beholder, as a subjective state of himself.

But here let us note that "beauty" is an abstract term, and we cannot talk of it as a concrete reality, without losing sight of fact, and of all that can enable us to answer rightly and satisfactorily any questions we may ask concerning it. Accepting this, and governing our-

selves accordingly, the question becomes simply this, is beauty a property of objects or not? When we call them beautiful do we describe them, or ourselves as we are when beholding, or thinking of them?

23. In favor of the former view, there is, undoubtedly, the fact that we can go to some extent, at least, in describing and classifying the objects that we call beautiful. Thus, it is said that an object to be beautiful, must have many parts united in harmonious proportion, producing harmony in unity. There must also be variety of parts, so that a curve line is the line of beauty, while a straight line, as being the shortest between any two given points, is the line of utility, etc.

But all these descriptions merely point out certain classes of objects that always please, by producing the emotions of beauty, and really do nothing more than point to certain conditions on which this class of pleasant emotions depends. And undoubtedly, the existence of these emotions does depend upon something external. They are not—no emotions are—entirely dependent upon the will or choice of the beholder. He can no more admire, for its beauty, a really ugly object than he can warm himself by an iceberg.

24. But why do we call the objects that excite these pleasant emotions beautiful? It is, undoubtedly, on account of the emotions they excite—the effect they produce upon us. We have no other test. No one can define beautiful objects. We do not first see, and then consciously think that an object is “harmony in unity,” etc., and then feel that it is beautiful, and call it so. But we first see the object, feel it to be beautiful, then call it so, and then, on examination, we find that it possesses these properties, “variety,” “harmony in unity,” etc. Hence it seems to me the inference is inevitable

that the emotions are the test by which, and by which alone, we can decide what is beautiful, and that all the adjectives which are used to express what are called the æsthetic properties are subjective rather than objective, and describe the feelings they excite in the beholder rather than the objects themselves.

The æsthetic emotions seem to be referable to three classes: beauty, sublimity and mirth, with their opposites.

25. Beautiful objects please, and produce a peculiar kind of pleasure or enjoyment, which perhaps no words can describe; as no classification or analysis has thus far been able to describe all the objects that produce such emotions, so that we can know before the experience of the emotion and by the mere definition that the object will produce it. But when the pleasant emotion passes into a degree of intensity which that which is grand, or in a measure terrible, alone can produce, we call it sublime. If, however, the emotion takes another form, surprising us by some incongruity, or unexpected turn of thought, we are disposed to laugh, and the emotion becomes one of mirth.

26. Mirth and sublimity are such that, in their nature, they cannot last or be permanent. They are too intense to be enduring. They exhaust the nervous system, and it is not unfrequently the case that persons laugh until they weep. In the same way one may be overwhelmed with grandeur; or, in other words, the objects which we call grand excite the sensibility to a point at which the exhaustion or consumption of the nerve-force is too rapid to last beyond a certain very limited time. The sight of the object then becomes painful and we gladly retire from its presence to scenes of more "*quiet beauty*."

27. Most writers have regarded "novelty" as an element of beauty, and in fact, of all the æsthetic emotions. It is certain that we laugh at a joke, or other form of witticism, on first hearing it, as we never do or can afterwards. Novelty is, in this case, clearly and indisputably an element of one class of the æsthetic emotions. And they are vastly the lowest in their character, and most nearly akin to mere sensual enjoyments. Even in case of objects that are beautiful or sublime, there is a peculiarity of the emotions that we experience when we first behold them that we never have on any subsequent occasion. And to that extent, novelty is, doubtless, an element of beauty. But it certainly indicates a low state of æsthetic culture to mistake this element—the mere pleasure excited by novelty—for beauty, or to prefer it to that more quiet and enduring pleasure which never fails to increase with familiarity in the case of what is truly beautiful or grand.

28. The law of the sensibility noticed in a preceding lecture doubtless holds in regard to æsthetic emotions, also. There may, indeed, be no change in the susceptibility itself; but there will almost surely be a change in the intellectual antecedent. If we habituate ourselves to the sight of what is beautiful or sublime, with nothing more than the mere sight of it, no doubt the sensational effect will diminish with each occasion of beholding it, until we come to see it with no consciousness of the emotions which it at first excited. But, if on each recurrence of recognition, we pause to think of the object sufficiently to appreciate it and get some new insight into its meaning and significance, we shall certainly admire it the more—our æsthetic emotions will increase in intensity with experience rather than the contrary.

29. That which discriminates between the objects that please by their real beauty, and those that delight by their mere novelty and grotesqueness is called taste. And taste is thus made to be a faculty of the mind ; or to express the fact in a better form—taste is a form of mental activity in which we discriminate what is really beautiful and as such, will always please all persons of true refinement and delicacy of the rational sensibility. And as such, it is also a guide to the production of those works of art which are designed chiefly to please, and constitute what we call the Fine Arts. The two forms of mental activity are akin to each other, or in fact they are really but one and the same form under different circumstances.

30. I believe that what is called “taste” as a guide in the production of the fine arts, even when it rises to the grade called “genius,” has its seat primarily in the sensibility. Take music as an example. One is born, we will suppose, with an unusual susceptibility to the pleasure of harmonious and melodious sounds. His pleasure leads to efforts to produce and enjoy such sounds, or in other words, to music. I presume that such an one has originally no greater power of producing sounds that are musical than other persons ; but he has a quicker perception of their harmony and a surer guide therefore in their production. Hence, as we say, “he has talent,” or his taste is cultivated into a superiority of execution which others do not possess. And the same is doubtless true with regard to any of the other departments of æsthetic culture or attainments.

31. Emotions akin to those we experience in beholding objects of beauty, are also felt in contemplating truth. A French writer, Degerando I believe, has said “beauty is nothing but truth put in action,” or as we should say

in English, "beauty is but truth realized." The word truth, like beauty, is of course abstract, and like beauty also, is often used by metonymy for the concrete, to denote that which is true. Every lover of truth, (and doubtless every person whether a lover of truth or not,) has at some time in his life experienced the pleasurable emotions which arise on the first discovery of a new truth. It is certainly a pleasure akin to that which the most sensitive admirer of the beautiful and the grand, feels on seeing something that excels in that line of excellence.

32. And not only at the first discovery of any truth that is new to us do we experience this pleasurable emotion; there is an abiding pleasure in the truth. It gives us pleasure to know that what we hold or have accepted as truth is true. But more than that, there is a harmony between the very constitution of our minds and whatever is true, whereby that which is true pleases us better than that which is false; just as beautiful objects please us better than those that are ugly. This is not merely the result of education, though it may be greatly modified by education. It is the result rather of that harmony which has been established by the Author of Nature between all parts of the universe—all the works of His hand. And this adaptation, though little observed and thought of, is, to my mind, one of the strongest proofs and most striking manifestations of Divine Purpose in Creation. Not only do we enjoy what is beautiful and good, but if we will keep our souls in proper culture, we are uneasy in error, as the body is in pain when influenced by anything that is injurious to our well being.

33. I have said that these emotions are the only test that we have of beauty, sublimity, wit, etc.; and hence

we must always refer to these emotions as the ground of our æsthetic judgments ; that is, judgments in which we affirm an object to be beautiful, sublime etc., or the reverse. We cannot define beauty, sublimity, or wit, and then *prove* by means of this definition that any given object is beautiful. *De gustibus non est disputandum*, is an axiom of the old logicians, and undoubtedly true. And the reason is to be found in the fact already stated. We know that an object is beautiful only by the emotions it creates, and no process of reasoning can produce these emotions. We must see an object to feel that it is beautiful ; and when we feel it to be so, we need no other proof, and in fact can accept no other proof, that it is beautiful ; nor can we be convinced that it is beautiful until the feelings have been produced, and we are convinced, not because we see but because we feel the beauty of what is before us.

34. Suppose two persons come into a room of ordinary temperature, the one burning with fever and the other shaking with an ague chill. To the former the room would feel hot and to the other it would seem cold, and no amount of reasoning could make it seem warm to the one or cold to the other ; and of course, therefore no reasoning could convince the one or the other of his error. If now we should appeal to a thermometer, it is quite probable that they would have confidence in the indications of that instrument, and so be made willing to admit that the fault was their own, and thus to *confess* that the temperature of the room is right. But they could not be argued into *feeling* that it was so. Not even an appeal to fact as in this case, could change their *feeling*. If now the matter were one, as most often happens in matters of mere taste, in regard to which there could be no appeal to a common measure or any accepted stand-

ard, we should be obliged to leave each party in the possession and enjoyment of his own sentiments, with no hope or means of convincing him of his error.

35. The propositions that are affirmed on the ground of feeling are properly called *sentiments* to distinguish them from opinions or judgments.

It is in fact true in all cases that we have or may have after a sensation of any kind, not only a perception and an act of judgment, but a sentiment also, based upon what we may call an *æsthesis*. That is, the object produces a feeling, a sensori-motor or an ideo-motor feeling, and we make an affirmation concerning it, which shows rather what is our feeling towards it than what it is. This is in fact the case in all those propositions which affirm of objects, the subjective properties spoken of in a preceding lecture (VI, § 32).

36. And indeed any proposition that affirms of any object, any one of those properties which depend on the *quality* of the sensation, (Lecture IV, § 19,) is to a large extent, of the nature of mere sentiment. We say a thing is warm or cold, red or white, and these words, in the present state of our knowledge, are so far from describing exactly the thing spoken of, that they scarcely do more than show how the object affects us. With form it is different.

37. Still however, it is not customary, nor perhaps will it serve any good purpose to carry the matter quite so far. It is undoubtedly true, nevertheless, that a large share of our "opinions" as we call them, of persons and things around us, are mere sentiments, assertions based on the feelings we have towards them, rather than any real knowledge or sound judgment concerning them. We call those we love, good and beautiful, and those we hate, ugly, horrid, bad, etc. And as a general thing,

women, being of a more delicate sensibility, have their stock of knowledge and wisdom made up of sentiment to a much larger extent than men. Hence their noted quickness of perception as it is called, their ready tact, easy, graceful and almost instantaneous, and for the most part quite unconscious adaptation to persons and things around them. It is the result of sentiment, of "instinct" far more than of thought and purpose.

38. In the case of truth, however, the order is reversed. We see that a proposition is true either intuitively, as in self-evident axioms, or as the result of demonstration and proof, and then we feel the peculiar pleasure which arises from the comprehension of a truth accompanied, as of course the comprehension must be, with the conviction that it is true. In æsthetics, then, we first see the object, then feel its beauty, and then affirm it to be beautiful. See, feel, affirm, this is the order in æsthetics. But in the case of truth, or matter of intelligence, we first see or think of the object then affirm the property of it and then feel the truthfulness of what we affirm—see, affirm and feel—this is the order in logic.

39. And as in æsthetics, so in logic, a mistake is often made which is very serious in its character. The mistake in æsthetics I have pointed out. It consists in mistaking the pleasure which the novelty seldom fails to produce for the genuine emotions of beauty, sublimity, etc. So in the pursuit and discovery of truth, one may mistake the pleasure which comes from the mere gratification of an idle curiosity, for love of truth and for the pleasure we take in comprehending and believing it. So too, and perhaps still more frequently, one may mistake a mere selfish gratification, arising from the fact that a proposition or a doctrine favors his opinions, interests, or convenience, for the pure, unselfish and impersonal en-

joyment of truth. And it is not at all uncommon for persons of low culture, strong will, or selfish habits, to make this sort of pleasure their only guide and test in matters of opinion, mistaking it for the real test; perhaps from never having had sufficient experience of the genuine emotions to know what they are, or even to suspect their existence.

40. But even the genuine emotion, the pleasure we take in truth, is not the proper test. To hold that it is, is to confound æsthetics with logic, and to mistake the true order, see feel and affirm—see, affirm and feel, the one for the other. The first is the order of æsthetics, and the only one we can have in that department. And as a consequence we have the maxim “no reasoning concerning tastes,” and the result an endless diversity of opinions in matters of mere taste, with no probability or possibility of bringing all men to an agreement in such matters, even though we may have endless disputes and discussions. But in matters of truth we have a place for reasoning, and although reasoning does not always bring men to an agreement in opinion, yet it does so to a large extent in some departments, and in pure mathematics it does so entirely. And if it ever fails to do so anywhere it is because of the æsthetic element that enters into the process, consisting as it does, in the different estimates which men choose, in consequence of mere feeling or self interest, to place upon the different elements or different parts of the argument.

41. Taste is probably more completely a matter of culture and acquirement than any other of the so-called mental faculties. It depends upon the condition of the nerve-tissues; a condition moreover, that is not produced or producible on the instant or by any sudden transformation or change, like a sensation or mere emotion.

Under the beneficent arrangement of our system, we become gradually, and sometimes pretty rapidly, accustomed to almost any situation in which we are placed, and thus insensible to what would otherwise produce sensations of intolerable intensity. Even "beauty palls upon the senses," otherwise we might, as the poet expresses it, "die of aromatic pain."

42. But the chief dangers are in the opposite direction. Surrounding objects that are ugly or totally devoid of beauty, excess of animal indulgence, or even familiarity with objects that are gross and coarse, or fantastic, ill-formed and unlovely, all such things either produce a deadening of the æsthetic sensibility or prevent its development. A pure and correct taste therefore is always the result of a long experience reaching into months and years of the past. It is the result of an education that must have been not only long continued but also uninterrupted, in its familiarity with that which is pure and lovely. One endowed with a large and active brain may often arise quite suddenly, and amidst the most unfavorable circumstances as we should regard them, to the manifestation of great intellectual power—a coarse rough energy—that makes itself felt, far and wide over the opinions and actions of mankind. But no such sudden emergencies into the possession and exercise of fine taste, occur.

43. Doubtless there are diversities in the original constitution in respect to taste. Some seem to be refined and delicate by nature; they seem to grow up without becoming conformed to the circumstances around them. They sometimes surprise us, not so much, indeed, by the ordinary manifestations of taste in judging of other things, as by the production of some work of art, some poem, or other creation of genius which was unexpected

from such a source, and remains, like some of the poems of Burns, or the descriptions of Hugh Miller, for example, an object of delight and admiration forever, unsurpassed, if not unsurpassable, for beauty. But such persons must soon find more congenial surroundings, or they sink as victims. Abandoning themselves to sensuality, they blunt and deaden their susceptibility, and live on, degraded beings, mere wrecks and ruins; or they fall into an early grave, dying of the exhaustive and rapid out-wear which comes from the contact of so delicate a structure with such coarse surroundings.

44. Why truth and beauty should please, albeit in these different orders of the sequence of their intellectual antecedents, we cannot tell. I regard it, as Dr. Chalmers has so eloquently shown in his *Bridgewater Treatise*, as one of the most interesting and conclusive proofs of the existence of a wise and beneficent Creator of all things, that the constitution of our nature is so ordered and adapted to things around us, as to be in harmony with them, so that the pleasure we feel, when we are doing what is right, believing what is true and admiring what is beautiful, is to us both a proof that we are in the right and a reward for being so.

LECTURE IX.

MORAL AND RELIGIOUS SENTIMENTS.

There remains to be considered three classes of the second sub-division of the rational emotions: that sub-division, namely, which implies an intellectual antecedent, and are, therefore, consequent upon some mental act. The three that remain are the ethic, theistic and reflex, or the sentiment of self.

1. I have characterized the æsthetic emotions by several properties of them; but the one which must stand as the distinguishing feature is, that they have for their antecedent, *an act of insight*, into the nature of that which is perceived, or thought of, and so becomes the object of the emotion.

2. With regard to the ethic emotions, their characteristic, as I think, is this, namely, they result from an *act of reasoning*, concerning the tendency of actions. Hence while as we have seen, an æsthetic judgment, as "this is beautiful," follows and depends upon the feeling, or emotion, of beauty, the *moral judgment*, on the other hand, "this is right," precedes the ethic emotion, or feeling that "it ought, therefore, to be done," and the emotion, as a consequence, follows and depends upon the

judgment or opinion. In this respect, it is like the sentiment of truth, spoken of in the last lecture.

3. There has been a disposition to regard the ethic emotions as belonging to the same class as the æsthetic, in this respect; that is, as preceding and determining the judgment rather than the reverse, as I have just stated. This view was at first distinctly proposed by the Earl of Shaftsbury about the beginning of the last century, and from his view has arisen the term, "moral sense," and (as a substitute for it, to denote the same thing), "conscience;" the former of which has been pretty generally dropped, and the latter as generally retained, and is still used by persons of both schools—namely, those who think that the emotion precedes the judgment and those who think that the reverse order is the real one.

4. In regard to the theistic emotions, there are, also, two theories, differing precisely as the two that are entertained with regard to the ethic emotions. The one holding that the "idea of God" follows upon the theistic, or religious emotions, and the other holding that, like the affections, they have an intellectual antecedent. But in reference to this antecedent, there are two opinions, and consequently two schools or classes of philosophers. One class, of whom the German Schelling stands prominent, believes it to be an immediate act of insight, or intuition rather (Lecture VI, § 9), *intellectuale anschauung*, and the other class hold that the intellectual act is one of reasoning, and this last is the opinion that I adopt.

5. The advocates of the first named theory are usually called "*mystics*." We find them among the New Platonists of Alexandria, the mystics, so called, in the Middle Ages, and of course among the admirers and follow-

ers of those philosophers in modern times. I do not accept this theory for the three following reasons :

(1) If this view of the religious emotions is right, these emotions are of the same class as the mere physical emotions, or appetites, and the same also as the mental desires ; they have no intellectual antecedent, and must, therefore, share largely in the properties of the classes of emotions that have no intellectual antecedent ; for which we may refer to the preceding lectures.

(2) But, secondly, no emotion of this class can lead to an idea, that is, to definite, conscious thinking of an *object* previous to its cognition. It may lead us to think of ourselves, as *subject*. It cannot lead us to think of the proper object of the emotions ; for such emotions have no object in this sense. One loves or hates *something*, and the thing loved or hated is the object of the affections, and must have been seen, or at least, thought of, before the affection. One may hunger *for* something, but the expression, "he hungers *it*" does not occur, and would be unintelligible, if it did.

(3) Nor, again, can such an emotion lead us to think of any proper object, or to anything that would gratify it, without previous cognition of it. Thus, when, in adult life, we are hungry, we think of articles of food, and the feeling doubtless leads us to do so. But this comes from experience ; and the order of development is obvious. Before experience, hunger would cause, or rather, would be, an uneasy sensation. This would put the sensory tissue of the organs of smell into a condition in which the odor emitted by the articles of food would be unusually agreeable, and would, of course, produce a sensori-motor tendency to take such articles into the mouth. Their presence in the mouth would add to

the pleasure by their flavor, and produce mastication and deglutition, with a consequent relief of the sensation of hunger. Now suppose (as with rational beings it would occur), a recollection of the act of eating, and the consequent relief; whenever the sensation might occur again, it would, of course, lead to thinking of the article of food that had been found to appease it.

6. But in order to this, we shall have had, and must have had, as an indispensable condition, the intellectual experience which consists in the immediate cognition of the object that satisfied the want. The mere emotion did not, and could not, of itself, lead to any distinct thought or knowledge of that which would satisfy it. It does lead to acts by which we learn what that object is; but the learning what it is, is an act of cognition. So with the theistic emotions. If they belong to the class, to which the theory of the mystics refers them, they could not lead to "the idea of" God, or produce any theological opinions or belief at all. They could not, in themselves, and previous to any cognition, lead to a belief in God, or to any act of worship that should distinctly recognize such a Being, any more than mere hunger could, of itself, and without any experience of eating, give a knowledge of that which would satisfy our hunger.

7. With regard to the other theories, much may, indeed, be said in favor of Schelling's view. The mere insight into the phenomena of nature, nay even the mere sight of them, in some of their forms and aspects, does seem to occasion the thought that there is, and must be, some thing or some Being, in and behind them, manifesting Himself through them, as the soul of man does through the tones of his voice, the play of the features

and the acts of his body. However, among children, in very early, if not the very earliest infancy, and among the most unreflecting of the savages, there are often most unmistakable indications of the presence of emotions of reverence and awe which are essentially theistic in their character.

8. But whatever we may think of this view, it is certain that reasoning upon these phenomena, does lead to the recognition and acknowledgment of some Supreme Being, who was before all things else, and is manifest in them.*

9. And so soon as we recognize the existence of such a Being, the very contemplation of Him awakens the religious or theistic emotions, which manifest themselves in the entertainment of doctrines, or dogmas concerning Him, *as a matter of faith*, and in acts of worship. Hence a form of theism, or theology, among all people, and a worship based upon their theology, and for the most part, also, a priesthood, with a *priestcraft*, making use of these convictions and emotions, for purposes of ambition, of aggrandizement and power, which, while it may be used for good, has but too often been abused for purposes antagonistic to the best interests of mankind. But as soon as the conviction of the existence of God has become a matter of consciousness, this conviction becomes intimately connected with the ethic emotions, also. We feel that we ought to worship and obey Him.

* Even HERBERT SPENCER (*First Principles*, § 31), says, "The consciousness of an Inscrutable Power manifested to us through all phenomena has been growing ever clearer; and must eventually be freed from its imperfections. The certainty that, on the one hand, such a Power exists, while, on the other hand, its nature transcends intuition," (not *insight* in our sense of the word), "and is beyond imagination, is the certainty towards which intelligence has, from the first, been progressing."

10. The religious emotions are of the same general character as the affections, already described. In the course of human life, they appear early, before much of reflection and reasoning. At that time, they are easily guided to the proper object and to rational and proper views of the attributes and character of God. They are also easily perverted and misguided, as we see in the various forms of polytheism and idolatry that have played so important a part in the history of the world. If properly guided, exercised and expressed in word and act, they grow in strength and intensity, like the benevolent affections, and the man is religious from infancy. If, however, they are repressed and neglected, they seem to accumulate, like the mere physical emotions, until, in some hour of peril or excitement, they burst forth in a paroxysm of religious experience, known, under some of its aspects, to all forms of religion, even the lowest forms of idolatry and polytheism. But when properly guided, it is an awakening of the religious emotions, and the commencement of a connection of them with the ethic emotions—a sense of duty and of obligation, with a sense of dependence and accountability.

11. The fourth class of emotions in this sub-division are the emotions of self, what the French call "*sentiment du moi*." They can of course arise only with consciousness and the form of reflective thought, which results in self-consciousness. Out of this consciousness arise feelings of self respect, etc., when one thinks he has done uprightly and well; feelings of the opposite character, as shame, remorse, etc., when one is convinced that he has done ill.

12. And it happens here as it does very generally with the feelings of this class—the rational emotions—that there is something of a lower kind—some form of emo-

tions belonging to the animal sensibility, and for the most part also to the lowest form—the excito-motor or physical emotions, that is so much like the real emotion of the higher class that the lower is often taken for the higher. There is a sort of self-complacency, a satisfaction with self, which is purely a matter of mere physical constitution (often indeed a most indispensable element of success and of greatness even), that rests upon no well considered opinion of one's capacities or merits—no consciousness of right or of integrity. It is rather a mere matter of physical constitution, and is very likely to be accompanied with, or to produce an inability to see and acknowledge faults in one's self that are obvious, perhaps offensively conspicuous to all others.

13. But in its proper exercise this feeling takes the form of self respect, a sense of honor or pride that is commendable, when one has consciously done what he thought and believed to be right. And in the opposite direction it becomes a sense of shame and remorse in view of what one has done when he regards that which he has done as wrong, that becomes, to a sensitive nature, one of the most intolerable scourges of which a human being is capable. It is the "bruised spirit" which "no man can bear," and more frequently, perhaps, than any other cause, drives men who are tormented with it to suicide.

14. It must be carefully noted that the emotions of self are based not on a mere consciousness of self, which would be a mere act of cognition. They are based rather upon an act of judgment, an opinion concerning self. Doubtless some emotions arise on the mere act of self cognition by consciousness; for such seems to be the case universally and with every act of cognition. And the emotion thus arising will be, according to the

classification I have here adopted, an affection, and conforms to the laws and conditions of the emotions belonging to that class. It is primarily a mere constitutional emotion, determined rather by the peculiarities of our constitution than the worthiness or unworthiness of the object perceived; just as the same object may excite either hope or fear, love or hate, in sentient beings differently constituted, And it is moreover largely a matter of mere physical constitution—the size and position of some part of the brain or spinal cord.

15. But the class of emotions of self to which reference is here made, is based upon a judgment implying some reflection and thought, some estimate of our acts, and of course also a comparison of them with some standard. Hence two sources of error: the *first* is in our estimate of our own acts. Here both the constitutional and self-emotion of the lower kind already spoken of, will enter largely, disposing to humility and self distrust, or to their opposites; and that other fact also, already spoken of, namely, that we are very apt to estimate our success and our merit by the amount of effort we make or find it necessary to make, rather than by the result itself. The *second* source of error is, that persons of dull insight and little imagination are likely to have a very low standard of excellence with which they will compare themselves and their own acts, and thus are often better pleased with a very inferior result than others with a higher ideal for a standard would be with the most perfect thing that the genius of man can produce. The self-love or self-esteem which so often misleads one in his estimate of himself, is a mere blind instinct of the lowest order.

16. The emotions of self, like the theistic, connect themselves intimately with the ethic. And in fact for most practical purposes we might refer the four or

five classes of emotions, (five including the sentiment of truth spoken of in the last lecture,) which belong by this sub-division, to the two classes, æsthetic and ethic. The æsthetic being in themselves purely subjective, ending in self, mere enjoyment and the reverse; and the ethical being objective and leading to acts in reference to some object to be affected or effected by the act. In this view, this division of this part of the rational emotions would be analogous to the division of the affections into the subjective and objective. But to return to the thought with which we began this paragraph, the emotions of self connect themselves intimately with the ethical; for it is no less true that we take pleasure in self approval and are pained at thought of anything for which we condemn ourselves, than it is that we feel that it is right and a duty to do that which secures our own self approval, and to avoid that, as wrong, which occasions our condemnation of self.

Hence we return to the consideration of the ethical emotions of which we have already made mention.

17. I have already alluded to the theory of the moral sense. This theory makes the discernment of the moral character of actions, as right or wrong analogous to the discrimination of the colors of bodies by sight, etc. And hence the name, moral sense. But when we consider the distinction between mere sight and *insight*, mere seeing and seeing *into*, which I have pointed out in the foregoing lecture, we shall be prepared to see that the capacity to discern the moral character of acts does not belong to the *senses* at all; it is rather a function of insight. I see, and readily admit, the entire class of facts on which the advocates of this theory rest their arguments in its favor. We do in many cases see and feel at once, and without hesitation or reflection, that some acts

are right and some are wrong. Of this there is no doubt. Nor can we satisfactorily explain the fact as the opponents of this theory have sought to do, by referring the phenomena to habit and the influence of training. Habit and the results of education and training are always and only, expressions of constitutional tendencies of human nature, and are merely its outgrowth. If men judge perfidy to be wrong, it is because there is something in human nature that enables them to *see*, and disposes them to *feel*, that it is so.

18. But we cannot regard this capacity to discern the moral character of acts as belonging to the senses at all; for although it is like them in many respects, it is unlike them in two most important particulars.

(1) It has no special organ as sight, hearing, etc., exclusively to itself. It has undoubtedly its organ, and that organ I think, is beyond question the brain proper or the hemispheres. But they are the organ of insight in general, and they discern the metaphysical properties of all objects, material as well as immaterial, and the nature of all things, of lines and angles, as well as the moral character of actions.

(2) There are many cases in which we do not discern the moral character of an act at first sight, and on merely seeing into and comprehending it, in itself, as a mere act. We find it necessary to consider its relations, the emotions from which it proceeds, the results to which, in its influences and consequences it tends. We find it necessary to reason about it and conclude what is its character.

19. Now both these facts refer our discernment of the character of acts to insight and reasoning. In some cases we see at once by mere insight, and as if by the seeing of the eye, whether an act be right or wrong; in others

we need to reason about the act. And you will remember that reasoning is but an exercise of insight, an aid to its functions, a mere *succedaneum* for its higher and more perfect exercise. We reason when insight fails, and to accomplish by the more toilsome and tedious process what we, for our shortsightedness, are unable to accomplish without that process.

20. But as soon as the moral character of an act is known and admitted, whether by insight or reasoning, a moral or ethic emotion is the necessary and inevitable result. If the act is seen to be right, we feel an emotion of duty to do it whenever we are placed in circumstances to make it obligatory *on us*. And we feel, too, that others ought to do it under the same circumstances; and we approve ourselves, and respect them, for doing it. But if the act be seen or admitted to be wrong, we feel in like manner that it ought not to be done, and a corresponding feeling of disapproval ensues for all those who have done it.

21. These emotions of duty may be referred to four classes according to their objects.

(1) The duties we owe ourselves if such a solecism may be allowed. We see that certain acts tend to promote our own welfare, the well being of the body, as temperance, chastity, etc., others promote the welfare of the mind as the acquisition of knowledge, truthfulness, etc. Others promote the refinement or æsthetic culture, and we acknowledge that such acts are right because of the results which they tend to produce, and therefore we feel that we ought to do them. Perhaps love of life and of well being is at the bottom of it.

(2) Duties that we owe to our fellow men. We see that our acts and words largely influence their welfare, and we feel that acts that promote their well being are

for that reason right, and we feel that we ought to do them. Perhaps affection and the love of society are at the bottom of this.

(3) Duties of a religious nature. We all believe, whether we confess it in words or not, in the existence of something more than this visible, material universe. We believe, and in many cases act accordingly, that that something is an Intelligent, Personal Agent, and accordingly we feel that there are acts of acknowledgement, etc. that are due to Him; acts which lead to and constitute a worship of some kind.

(4) And finally, we all see that society is necessary for man, necessary as a condition in which he can live and enjoy life, develope his nature and attain his destiny. And consequently we feel that something is due to society, to its officers and laws, its institutions and usages, customs and opinions.

22. Now what we call conscience, in these days, is the combination of these two elements—the *seeing* that an act is right and the *feeling* that it ought to be performed. And we use the word to express the complex of the two together, or either of the two elements separately, as (1) when we say “my conscience tells me that this is right,” or (2) when we say “my conscience tells me that I ought to do this.”

23. Hence what we call a man's conscience, is really a result of his culture. It is the compound result of his thought in thinking of, and seeing into and forming opinions about acts, in reference to their general character and tendencies, and of his moral culture; for here as everywhere else in the phenomena of sensibility, we become habituated, and so insensible, to almost anything. A man can become accustomed to great heat or cold. He can become so familiarized with great beauty and

great ugliness as to be alike insensible to both. And so too, that form of sensibility which we call conscience may become hardened, deadened, "seared as with a hot iron."

24. It is obvious therefore, that a man's conscience is no infallible guide, since his conscience is but himself, and that self, is in this connection, to be understood to be simply a work of his own creation ; what he has made it. And hence, therefore, the ethical paradox: "A man is always wrong when he acts contrary to his conscience, and not always right when he acts in accordance with it." He is wrong in acting contrary to his conscience, for he is doing what he believes ought not to be done ; and when acting in accordance with it he may be doing what ought not to be done.

25. Hence a good conscience is a matter of culture and acquisition. It comes from the constant habit of thinking of the nature and tendencies of our acts, and from *always* acting in accordance with our convictions of right and duty. But any neglect of this latter element will increase the moral insensibility or demoralization in which alone such an act could have had its origin ; and this process may go so far as to result, apparently, in a total indifference to the moral character of the acts we perform.

26. Moral culture, therefore, can be secured only by the two means, (1) constantly thinking and striving to *see* and *know* what is right, and (2) constantly and without interruption, cessation or exception, *doing* what is seen or thought to be right. And this culture is of course inwardly helped forward by a belief in God as a Moral Governor, whose attributes are identical with truth, justice and whatever is morally good, so that He will not only help those who are striving to do His will, but will also reward the good and punish the wrong doer.

27. And in some cases the religious feelings become excited and roused to the rank of a predominant influence upon the conduct. The fear and love of God becomes so great as to absorb and expel all other love and fear, and even to extinguish the fires of passion and lust. And naturally enough. As He, of all the objects we know or can think of, is the most terrible in wrath and the most beneficent in love, so the thought of Him in His omnipresent Majesty produces a deeper, a stronger, a more controlling feeling than any other object can excite.

Hence the entire revolution in our life and character which we often see as the result of a sudden conversion. And often it happens that the power of evil is so strong that nothing but such a change is found to be sufficient to rescue one from what seems to be otherwise inevitable ruin.

I speak of this, of course from a scientific point of view, and as a matter of observation and inference. I do not intend either to imply or to treat in this place any religious theory or theological dogma concerning the change which is so often witnessed as matter of fact in human experience.

28. It has been made apparent, I trust, in the last lecture, that results similar to those which are reached by the logical process, and expressed in the same form, may be reached by an æsthetic process. And the two differ in this, namely, the one has and the other has not an emotional element, or an element that belongs to sensibility. Thus, if we say "an object is beautiful," the form of the proposition is the same as if we had said "the object is hard." But in the former case, the proposition is based on a feeling, and is expressed by a judgment based upon an emotion. We affirm an object to be beautiful because we feel it to be so. Propositions of

this kind really express a feeling rather than a judgment and are *sentiments* rather than opinions.

29. In some cases, this is unavoidable, and a sentiment is all we can have. This is peculiarly true of æsthetic judgments. But in all departments of thought, there is a tendency to substitute sentiment for the results of purely intellectual activity, and to call that which pleases us, from whatever reason, true, without taking trouble to see why we are pleased with it, and whether the agreeable emotions are the legitimate result of what is good, beautiful and true, or whether we have them because we ourselves are in the wrong, and it merely happens to "jump with our humour."

30. Now whenever anything is matter of mere perception, or immediate insight, the intellectual act controls and determines the emotions; and we express, whenever we speak concerning it, the result of judgment rather than of feeling. Not only is the connection too immediate between the first act of cognition and the act of judgment, but the act of cognition is too prominent and conspicuous to allow the emotions to intervene, and take the place of intelligence. But if the matter to be expressed be one that requires thought, reasoning, deliberation, collecting and weighing of testimony, the feeling is likely to become prominent. At any rate, it is prompt, and as we say people "jump at conclusions," and affirm that to be true which conforms to their feelings, that which they feel to be true, rather than wait for the result of the more toilsome process of thought.

31. As a general rule thought is quicker than feeling; since in all cases, except mere excito-motor, it must precede the feeling, as its antecedent and determining cause. But it will often, perhaps always, happen that the feeling excited by the first cognition of an object or

event is very different from that which we shall come to have, after careful consideration and reasoning about the subject in all its bearings. Hence there is always a disposition to accept and act upon these first impulses—as mere sentiments—rather than to wait for the result of more mature reflection. And often it will happen that persons are convinced by an argument, that what they had not been accustomed to hold as truth, is, nevertheless, true, much sooner than the sentiment of truth, the feeling that it is true, arises and makes them feel like acknowledging it. In such cases, it is manifestly better to leave them to time and reflection rather than persist after the conclusive argument has been stated with so much of fulness as to be understood.

32. I have spoken at some length, in the preceding lecture, of the axiom, “there is no disputing about tastes.” Akin to this, and in fact, a result of the same ultimate principle, we have the fact, also, that different persons will appreciate, or estimate, an argument at a very different value. And this arises from those constitutional differences, which, however important in our estimate of human nature, or in forming an opinion as to the way in which persons will think and act under diverse circumstances, never enters into the discussions of general psychology. But we see illustrations in the case with which sanguine and hopeful persons are persuaded to enter upon hazardous or extreme measures, and in the difficulty with which persons of an opposite nature are persuaded to that, which although perfectly safe, they have not been accustomed to.

33. One may see the same thing in his own experience, by observing himself at different times and under the changes which health and disease, fatigue and its opposite produce. So far does this extend, that no man

should depend upon a hasty judgment, or accept an opinion on the first hearing of the argument in its favor, Wait until time, reflection and change of feelings, shall have produced their proper effect.

34. But what is the mere subterfuge of laziness and stupidity, in many cases, becomes an expedient of necessity in many others. In questions of duty and moral action, we are often obliged to decide and act before we can take the time necessary for a consideration of the matter in all its bearings and relations; we must act or speak "on the spur of the moment," as the expression is, and thus we act on mere feeling or sentiment. And this sentiment, as has already been said, is the result partly of natural constitution, and partly of education, of emotions and feelings that we have grown into—voluntarily cultivated, or allowed ourselves, by our self-indulgence and our vices, to fall into. The man who habitually acts according to the dictates of his conscience, that is, habitually does what he thinks to be right, becomes thereby quicker to see what is right, and more sensitive to feel the obligation of doing it.

35. There is, therefore, foundation in the psychology of man's opinions and feelings, for the opinion that man's failure to see, believe and accept truths of a moral and religious nature, is often a fault of his heart, as well as his head—a fault of his own, and for which, therefore, he is responsible, rather than a fault in the evidence on which he is asked to believe and act. In æsthetics and mere matters of taste, no one doubts the reality of what I am saying. A man of coarse or debased nature may fail to see the beauty of what is most perfect, and we attach no importance to the opinions of such persons in matters of mere taste. It is the same with persons of

low or debased moral nature. Their moral instincts, as we call them, are bad or low.

36. Hence the necessity for *faith* as a principle of action in moral matters. By faith, we admit that to be true which we cannot see, prove and fully comprehend to be true, as matter of science or simple intelligence. We take it for truth, and act upon it as though it were true; and if it be a principle leading to a higher course of action than that which we should have chosen, if we had followed merely our own tastes and inclinations, it produces a purifying and elevating effect upon us, and we, in the end, come to understand and know and appreciate that which we had accepted and acted upon as matter of faith; we rise to a higher level of vision, to a nearer and closer conformity of our instincts to the truth and reality of things. And not only do we comprehend more fully, but even our instinctive sentiments are far more reliable, in all those cases, in which, for want of time to think, we must act on the mere impulse of the moment.

37. Feelings of most kinds can exist by sympathy, or as sympathetic. As the name implies, we feel in these cases, not because the object of the feeling has excited the emotions we have in our own breasts, but because somebody else has the same feelings. From this statement of the nature of sympathetic feelings, it is manifest that the excito-motor, or mere physical feelings cannot be sympathetic, or exist by sympathy at all.

38. And further, it seems that the affections of the malevolent variety are not sympathetic, or capable of production by sympathy. The presence, or influence, of a person in anger, for example, has no tendency to provoke us to anger, unless it be at himself, for his folly or the annoyance he gives us. We do not get angry at

what provoked his anger, any the more readily or easily because he is angry. The same is doubtless true of envy, jealousy, hate, etc. I think that fear falls into the same category, although the fear that constitutes what is called "a panic," seems to be sympathetic. In that case, people—the whole community—seem to fear and to be disabled and beside themselves, with fear, not from any distinct conception of the cause of fear, but rather from some undefined or unknown cause exaggerated by imagination.

39. But the benevolent affections are sympathetic. The benevolence of any one person in a community, or circle of friends, makes others feel benevolent, even when there is no other cause of the increase of that feeling than his presence. It is so with hope—"it is inspiring," as we say. It is certainly so with most of the rational emotions, if not with all of them. This may be because the presence of persons under the influence of such feelings, puts us into a better physical condition, quiets our nerves, and predisposes us to be favorably affected by whatever is around us, or may happen to be the object of thought for the moment, and so our good feelings are more conspicuous and intense than they would otherwise be.

40. And, doubtless, much of the agreement in sentiment, and even the harmony and concurrence of opinion among men is the result of sympathy. If we can succeed, by any means, in making any one feel towards an object as we do, we have but very little difficulty in making him *think* as we do *about* it. Nay even good-will towards us will often induce others to adopt our opinions, as matter of favor or compliment to us. In such cases, they can hardly be said to think as we do; but only to pretend or make-believe to do so. But when

they feel as we do towards the object of our opinions, feeling has a powerful influence in directing, controlling and determining the thought in the same direction, and to the same results as our own. This fact is of great importance to the orator and to anybody in any circumstances who may have occasion to influence the conduct of others, while they retain the appearance of being free in their actions and the belief that they are so.

41. The development and culture of the emotional nature is a very different thing, in its conditions and laws, from the development and culture of the intellect. *Strength* of intellect depends upon physical conditions over which man has much less control than he has over the part of his nature we are now considering. It depends very much on size and health of brain, just as physical strength depends upon the size and health of the muscles of the body. And even exercise, though it will to some extent develop the organ of thought, and thus increase its power, will not, nevertheless, increase the mental power to an extent anything like its increase of physical strength. In education and study and thought, we do not so much increase the strength of mind as acquire the habit and power of controlling it, so as to accomplish a maximum of result with the strength we have. We see the same thing often, in the development of bodily efficiency. Often a man of inferior strength will do more than one that is far his superior in mere brute force, in consequence of his superior skill in directing and using the force he has.

42. But in regard to the moral nature, almost everything depends on exercise and culture. The three great branches of this kind of culture, refinement of taste, truthfulness and conscience (for I include, as already said, the religious culture under the word, conscience),

are alike in this respect. The man who cultivates his taste, by always acting in accordance with it, the man who cultivates his truthfulness, by always being true to his convictions, fair and candid in considering all questions and matters that come before him, and the man who cultivates his conscience, by always doing what he thinks to be right, becomes strong in all these elements of his moral nature. And on the other hand, the man who neglects his culture in these respects, becomes weak and the very instincts become perverted. They are not, as is often the case with intellect, merely in abeyance—a giant asleep, fearful in strength when aroused—they are dead; there is nothing to arouse. It is not the weakness of mere inaction, but the insensibility that ensues from the neglect or abuse of man's moral nature.

43. It is, indeed, true, as I have said, that one never fails to feel that that which he has seen and acknowledged to be right, ought to be done. But if he disregards this sense of "ought," he soon ceases to see that the act is right. He feels indifferent to the moral character of actions, because he has ceased to see the difference, or to judge that there is any, between right and wrong; and "*curriculum nefas*," as it may seem, he has ceased to see and acknowledge the difference, because he has ceased to feel or care for it. Contradictory as they are, both propositions are true, though, of course, in different senses. The true statement is, doubtless, this: the course of deterioration and demoralization *began* with a neglect to do something that was *seen* and *felt* to be a duty; then an effort at self-justification, by thinking that it was not a duty, or not very important, if it was, or that there was a sufficient justification for the departure from what is acknowledged to be right, in the peculiar circumstances of the case—making it an exception

—then on the next occasion, there was less of the moral feeling; less of the sense of “ought” than before, and so on, until, in consequence of this continued diminution of the moral feelings, one ceases to regard the intellectual element in his moral culture; and because he no longer feels the difference between right and wrong, he ceases to think that there is any. He does not think that there is none—the mental state is not sufficiently active in regard to the matter for that—but thought and care cease, because feeling has ceased, and feeling has ceased, because voluntary effort to do right has been for a long time feeble, and at last, wholly intermitted.

44. Hence persons who are thoroughly demoralized—their moral nature prostituted—seldom believe that others are any better than they are themselves. They do not believe in virtue at all, either in its existence or its value. And if caught in crime, such persons usually have little or no sense of guilt. They think themselves only more unfortunate than others. They cannot understand the feeling that exists towards them. They have no moral abhorrence of their crimes, cannot see why others should have, do not believe that they have, and seek some other cause for the proceedings against them. And many men and women, too, there are, who utterly fail to see the real cause why they are not held in higher estimation, or why they encounter so much of what they call “opposition,” only because, in consequence of the lowness of their moral culture, they cannot understand or appreciate the feelings of others.

45. And on the other hand, a “clear conscience,” an “approving conscience,” or a consciousness of right and rectitude, is one of the most efficient elements in human power. For this, one must be doing, and must have done in the past, what he believes to be right. He must

have carefully observed the dictates of his religious instincts. He must have been faithful to his conscience and his sense of personal honor. If he has done this, he feels confident of the approval of all good men ; and somehow or other, he feels assured that the course of nature will work with him, and for him ; and more than that, he feels sure of the approval, and favor and help of God. This confidence makes him strong ; it allows him to concentrate all his powers, without fear, misgiving or distraction, on what he has undertaken to do. But on the other hand, as the poet says, "Conscience makes cowards of us all." The man who is conscious that he is doing wrong, or not doing as he ought, is nervous, ill at ease, can seldom look you in the face, has not the full and entire command of his faculties, either mental or physical. And if he is conscious of having done a wrong, for which he has made no reparation, he feels insecure. There is a fear of exposure, there is an impression that mankind owe him a grudge, that "the constitution and course of nature" are not in harmony with him. Nor can he divest himself of the fear of punishment, and the retribution of a righteous Moral Governor of the universe, either in this world or in the life to come.

46. And yet this approval of conscience, and the self-confidence which it gives, though almost an invariable accompaniment of high moral excellence, is no proof of the reality or possession of such excellence. It proves only that one has lived up to his conscience ; it does not prove that that conscience was not a very low and perverted one. It shows merely that one has very nearly realized his ideal of character ; but that ideal may be, nevertheless, quite a low one. And on the whole, it is generally much easier for those who have but a low ideal of excellence to satisfy themselves with what they do,

and what they are, than for those who, although they may be far superior, have a higher ideal standard with which they compare themselves, and from the realization of which, therefore, they find themselves at a much greater distance than many much inferior men.

LECTURE X.

VOLITION AND INSTINCT.

Having considered two of the primary classes of the phenomena of consciousness, sensibility and intelligence — we proceed to the third, namely, will.

1. It has been customary to speak of “the will” as if it were a concrete thing, a part of the soul, a faculty, an instrument or something of the kind that could be conceived of as capable of a separate existence; as an agent performing acts of itself and in its own right. I regard the term however as abstract, like imagination, consciousness, reason, and the like, used to denote a certain class of mental acts, and sometimes, by metonymy, to denote the mind that performs the acts.

2. By those who think and speak of “*the will*” as one of the “powers” or “faculties” of the mind, “the will” is regarded as a faculty that has the power of *spontaneous* action; that is of acting in and of itself, and not as material forces do, only as they are acted upon. And no one, I presume would deny the existence of a will as one of the faculties, who admits that there are any such faculties at all. Hence the question that has been discussed has not been in form, whether there be a will or not, but rather whether the will be free or not.

And this is really the question: whether it acts like a will and so is a will, or like the inanimate forces of nature as a mere piece of inert matter.

3. I think the question has been greatly complicated by the ontological error of assuming that "will" is a concrete thing, a substance, faculty or power, that can be spoken of as "the will." If it be so, the question of its existence is not only pertinent, but highly important. If not, the question is not only involved in difficulties, but is really impertinent, or perhaps I should rather say no question at all. If one should raise the question whether walking, thinking, etc., exist, we should be a little surprised and not a little puzzled to know what he really meant by such a question. If the question be whether there be "*walking* animals" or whether the animals that walk have special organs for so doing, it is intelligible, and admits of a ready and satisfactory answer. We can appeal to facts and to observation, as our means of ascertaining facts. But we do not consider "walking" as a thing of which existence can properly be predicated.

4. The first question, therefore, is whether there be or not facts or phenomena of volition and choice. Of this I suppose there can be no doubt; all languages have words implying the reality of such phenomena. All persons speak as though they were conscious of such acts. They are implied in the very idea of personality, in the first consciousness of the antithesis of subject and object of self and not-self; of the self that perceives an object and the object that is perceived. The first form of a fact or phenomenon of conscience is the complex form, which after analysis and judgment, is expressed in the proposition "I am perceiving [this paper]" or some object, denoted by another name. And in this fact are the three elements, "*I*" the subject, "*paper*" the object,

and "*perceiving*," the relation between them, and the two, subject and object, enter as causes and agents, and therefore as concrete substances.

5. Or in another way, more general and satisfactory. Any event takes place ; did I do it, or did somebody else ? If I affirm that I did it, I affirm in so doing my own agency, and by necessary consequence, my existence. Now one of the earliest facts that makes its appearance in the human consciousness is this of personal agency ; the doing of things ourselves, and not the mere being a second cause, a mere instrument, or tool of other persons' actions. In one case I am conscious that I do something ; in the other I am conscious that something is done to me, or that something is done by other persons, which I see and observe, but in which I had no part or agency whatever.

6. And in still another way we may get these facts distinctly before our minds. Let us refer to the case so often alluded to as illustrating this very point. I take hold of the conducting wire of an electrical machine and receive a shock. I do not consider myself as the cause of the contraction of the muscles, and the consequent motion of the arm and hand. But without any such external agent or machinery, I can produce precisely the same contraction and motion. Now I regard myself as being as truly and really the cause in one case as I do the machine in the other. And so in all our acts, we are conscious of the two elements, an outward cause acting upon us producing reflex emotions, and of a self or inward cause acting within. If the former act alone, we have involuntarily or spasmodic action as in St. Vitus' dance. It is doubtful whether the latter ever acts alone ; but we are often conscious of it as resisting the former, as trying to resist the spasmodic tendency, as when we

overcome indolence, sleepiness, etc., by persistent effort to keep awake and go on with our work.

7. Now it may be no very important question whether there be a will as a distinct part or faculty of the mind : for this question does not raise the other question whether there be voluntary acts or not ; it is merely an ontological question as to the nature of that which performs them. And in this I certainly agree with those who deny that there is any will in man or anywhere else. But of the reality of the phenomena or the acts which we call willing and choosing there can be no question or doubt. The only question is as to their nature. We are all conscious of acts which we ascribe to ourselves as our own, and of certain others which we ascribe to others, and for which we feel no responsibility, and which we consider as in no sense our own.

8. These facts distinguish and characterize—(some would say *constitute*)—personality. And it is certainly a confirmation of the view I have taken of animal life in the preceding lectures, that nowhere and by nobody or class of writers is personality ascribed to any members or individuals of the animal kingdom below man. We never speak of them as persons. And this fact indicates the universal belief of mankind, that there is in man something essentially different from what is found in animals in this respect. Different *essentially* I say, that is, different in kind, and not merely in degree. And there can be no objection to calling these phenomena, taken together, “will,” any more than there is in calling other classes respectively perception, consciousness, imagination, etc., and in the same use of language.

9. The question then, I repeat, is in regard to the nature of these acts : (for I think it shown to be, as obvious and as indisputable as any fact of consciousness, that the

mind is in some sense or way an active agent,) are they like the acts of mere inanimate, inert masses of matter? Do they obey the laws of motion as exemplified in mere physical science? Are they always in the direction of the resultant of the motives, emotions acting as forces? Are they a measure of the intensity of these forces? By answering these questions in the affirmative, we deny what is called the freedom of will, and in asserting freedom of will, we answer these questions in the negative.

10. Those who deny freedom of will, maintain that all action is determined by motives and is merely the resultant of motives—the natural physical result of one motive, if there be but one at a time, and the resultant of the combination of them all, if there be, as will for the most part happen, more than one.

11. Now we have seen, in our remarks on reflex action, that without will, or capacity for spontaneous activity which constitutes man a person, not a mere thing, man would be an active being. The objects of the world around him act upon him through his senses and produce sensori-motor and ideo-motor emotions, which are often strong enough to overcome the inertia, the weight of the bodily organs and limbs, and thus produce action without any consent or concurrent agency on his part. But these emotions, that is all the reflex emotions of the three classes above described, are physical in their nature, and obey the laws of motion to which all mere inanimate objects conform. We cannot by direct act of will increase or diminish their intensity. We cannot feel less cold or less warm merely by wishing to do so; the changes in our feelings, in the strength or intensity of the motive, must be produced by some change in the outward cause of sensation which precedes and is transformed into the emotion.

12. We have seen that there are three ontologically distinct causes of human action. (1) The condition of our own bodies acting through excito-motor emotions, (2) external objects acting through sensori-motor, (both may also become ideo-motor) and (3) the mind within. Of these three, the two last named are sufficient for our present purposes. But in regard to the first it may be desirable to say a word. In speaking of the excito-motor emotions it is common to have in mind as that which is specially referred to, the extra-nerve tissues, as muscles, skin, bones, blood-vessels, etc. But we have forms of sensation and of pain in which the nerves or nerve-centres are themselves the seat of the disease. This is the case in all forms of *neuralgic* pains. So too in many forms of spasmodic disease, as epilepsy, hydrophobia, etc. the disease is supposed to be in the nerve centres. This is also the case in all forms of insanity.

13. But a still further question arises. In cases where there is no disease, will the brain itself be active, *proprio vigore*, and will that activity occasion thought or other forms of mental action?

14. We know from physiology that every living tissue is undergoing changes in every moment of its living existence. Old cells are becoming effete and thrown off, new ones are formed to replace them. It seems hardly likely, however, though we do not certainly know, that these changes can occasion anything, sensation, thought, or feeling, that can appear in consciousness. But does the brain itself, or will it, from its own vitality ever work in the way that produces or accompanies thought, when neither of the three causes just enumerated are exciting it to activity? If it does, I have no doubt we should have conscious thought as the result. But it is contrary to analogy to suppose such activity, except where there

is disease, fatigue or something of the kind. And yet none of the analogies that we have are worth much. The liver, the heart, the lungs, the kidneys, etc. are active only when the blood, or their appropriate stimulant is present, exciting them to action.

15. But the nerve-tissue is totally different in its physiological structure and functions from either muscle, gland or membrane. And there certainly seems to be reason to believe that the grey matter of the brain would be self-active even in perfect health, whenever its constitutional tendency to action had not been exhausted, by either voluntary thought or the amount of attention that external, passing objects may occasion. Just as the muscles become restless from inaction, so the brain, not unlikely, itself becomes restless, and acts from mere excess of inaction.* And this form of activity may be manifest in human life in two ways: (1) the intensity of self-excitement, of what is called genius, and (2) in those aimless dreams, which are known as *reverie*, when, so far as we can discover, there is no cause or occasion for the thoughts, except the mere uncontrolled activity of the brain.

It is possible that in view of this phenomenon, it would be better to retain Carpenter's original classification of reflex emotions into four classes.† We should then have the three classes excited by external objects, and another excited and occasioned by the physical or automatic activity of the brain itself.

But none of these kinds of activity, even admitting

* CARPENTER, however, thinks otherwise. "But of itself, it (the nervous system), cannot produce any movement or give rise to any action." *Bohn's Edition*, § 427.

† "*Physiology*," § 430—431, And Lecture II, § 6, page 37, in this book.

and reckoning the four just named, present the phenomena of *spontaneity*, either as manifest in consciousness or demonstrable, as I think, from the nature of the case.

16. Let us then proceed to take a case to illustrate what we mean by spontaneity or freedom of will, and demonstrate, if we can, the reality of such freedom or spontaneity from an analysis of the act itself. Suppose something lying on the floor that is in my way or offensive to me. It is manifest that the strength or intensity of my desire to get it out of the way, is a measure of the intensity of the sensation it produces, and is in no way, and to no extent, and in no sense, a measure or indication of the difficulty in doing so, or of the effort that its removal would require. I stoop down to pick it up and remove it, with the impression that it is light, and weighs only a few ounces, it does not come: instantly, I "put to more strength," as the expression is, and it comes. Or, in case it is too heavy for me, I put forth all my strength, and then fail. But, meanwhile, there is no variation in the intensity of the emotion; that remains the same, the object remaining unchanged, and the strength of the emotion is determined, not by the difficulty of removing the object, but solely by the amount of annoyance it causes.

17. We might express this in a mathematical form. Let M represent motive, W , will and E , the amount of effort required to remove the object; then dM , dW and dE , will represent the varying intensity of each, and we have $dM + dW = dE$, for a more general formula. That is, Effort varies as Motion and Will combined; so that if both motion and will increase, effort will increase as much as both; if one increase and the other decrease, at the same time and rate, effort will remain the same, not-

withstanding the change in motive and volition. And so, too, if either motive or will change at any moment, while the other remains the same, effort will change as much as that one of the other elements changes. And finally, if effort changes, while either motive or will remains the same, we know that the other element has changed just as much as effort has changed.

18. Now to apply this formula to the case just supposed: the removal of something that annoys one from the floor. In that case, we saw that the effort did increase while the motive caused and measured by the annoyance occasioned by the object to be removed, remained constant or the same and unchanged. Hence, therefore, will must have changed, and to have changed, it must be something—a reality capable of change. And not only so; but it must be a reality capable of changing independently of the motive, so far, at least, as increasing or decreasing while motive remains constant, is concerned. And for this reason, therefore, will or volition cannot be a mere resultant of motives; it must be something substantially different and distinct from mere motives or emotions.

19. It is not necessary to say that such a thing often occurs. If it occurs but once, it proves all that I am now seeking to establish, namely, that the mind itself is a cause of action—a force, something, at least, in the production of motion. It acts as a force in moving, first, our own limbs and bodies, and so, through them, other objects external to us.

And it certainly is possible that feelings of pride and such like, may be excited on the failure to remove the object, at the first trial, which may add intensity to the next effort. It is certain also that motives of most kinds, perhaps all, and certainly the excito-motor kinds do in-

crease by delay in performing the act that gratifies and relieves them; as in the case of hunger and fatigue, we grow more hungry and fatigued until we take food and rest.

20. But manifestly no such explanation of the case just supposed for discussion, will be satisfactory or diminish its value as a proof of the proposition maintained; namely, that the mind itself is a cause—one of the forces, if we choose so to designate it—in the production of actions which we ascribe to man, and of which we regard him as the agent and cause; for without here discussing any particular act, we can readily suppose a case into which no such elements enter. And besides, we have not only supposed and supposable cases; we have testimony of consciousness to this as well as to other facts. We know in certain cases where there is an increase of effort, that no such motives as obstinacy or pride, etc., have entered into the complex antecedent of an act, lending their additional force to that of those that were already acting.

And in regard to the increment of the mere motive element, we have another consideration: it takes time for such an increase. In some cases, as in contact with a hot iron, for example, the increase is rapid. But in others, as in that supposed, the increase is too slow to enable us to account for the increase of effort by referring to it. In the case of an odor, for example, if it be slight, we may either soon become accustomed to it, and cease to perceive it at all, or it may, after some time, hours perhaps, become so intense as to produce nausea.

21. I think the foregoing discussion must be regarded as sufficient to prove the reality of will; that is, that the mind itself is a force, and acts in the production of actions, so that in many, if not most of our actions, there

is something more than mere reflex emotions. It enters itself as one of the forces that produce action, so that of any act (almost) it may be said that the act itself is the effect of the combined influence of (1) external objects, acting through sensori-motor and ideo-motor emotions, (2) the body acting as cause of excito-motor emotions, and (3) the mind itself acting as will. These three concurrent causes of action are substantially independent of each other, and they act, each of them by its own laws and according to its own nature.

22. I now have another proof and illustration in regard to the *nature* of this activity of the mind. *We often decide and act against the stronger, but lower motives, in favor of the weaker but higher*, and out of this comes what we call self denial, self-sacrifice, etc.

23. I am now referring to a difference between the various classes of motives that I have not before pointed out. Motives of the excito-motor or mere physical kind are always more intense in their nature, and so, stronger than the motives of the higher kinds. As we have seen, they increase in their intensity, like hunger, until they become uncontrollable or irresistible, so that we have not only examples of men, as a ship's crew, slaying and eating their companions, but even of mothers, slaying and eating their own offspring rather than endure the pains of their own hunger. When an emotion of any class becomes thus uncontrollable, we call it a *passion*, and consider ourselves, as the name indicates, under its control, as it were suffering captivity. The excito-motor, or physical emotions, like hunger, soon and surely rise to this point, unless either (1) they are gratified, or (2) some means be taken to prevent their rising any farther; as for example, a nauseous drug may prevent hunger, a stimulant may prevent the sense of increasing fatigue,

and a diversion of the thoughts will often allay the motive that arises from such causes.

24. But the motives of the higher classes conform to a different law in this respect. A dictate of conscience, for example, may increase with a neglect of duty ; but it never becomes a passion. So with remorse or shame at the thought of a base act. It is an abiding feeling, and may indeed have paroxysms of intensity, but it does not usually rise into a paroxysm, and expend itself in a transient outburst. Feelings and motions of this kind are a constant pressure, and the contrast between the two kinds is well illustrated by comparing a sudden blow, with the constant pressure of a heavy weight. The momentum of the blow, even though the falling body be comparatively light, may be greater for the instant than the very heavy pressure of a great weight, and yet in the long run, the pressure, extending through an indefinite period of time, would be greater than the momentum of the blow.

25. Now the contrast between the pressure of a temptation to some act of sensual indulgence, for example, on the one hand, and the restraining influence of conscience, on the other, is like that between the momentum of a sudden blow, and that of the constant pressure of an enduring weight. The temptation is, for the instant, stronger, and the pleasure from indulgence is, for the moment, greater than the restraint of conscience, and the sum of the consequences of the act, notwithstanding the amount of happiness and well-being that comes from doing right, will far outweigh, and it is well known that they will far outweigh, in the end, all the pleasures of indulgence. But the latter are instant and pressing, and though comparatively few and small, they are concentrated into one moment, while the others are, as it

were, spread over the whole future, and therefore, do not bear so heavily on any one point. Were this not so, no man would do wrong; the motive to do so could never in any case come to be so strong as the motive to act in the other way.

26. If we will recall what has been said in a preceding lecture, with regard to the nature of the emotions of the different kinds, we shall see that they exactly fulfill these conditions. Take as an example, hunger, which is one of the lower animal, or excito-motor kind. It increases with the increase of the physical condition on which it depends, until the act of eating occurs which satisfies the appetite, and then we no longer wish to eat. But the case is far different with the motives of the higher class—the rational or ideo-motor. Take for example, self-respect, or, as it is sometimes called, “the approval of conscience.” It is constant, acts at all times, and through all time. It may not be, and, in fact, we often see that it is not, so strong at isolated moments as the lower emotions, the appetites. But they become exhausted with the act that gratifies them, while self-approval obeys a very different law of constancy and increase.

27. We have a good illustration of this difference between the two kinds of motives—the higher or ideo-motor and the lower or excito-motor in a case under the influence of gravity. Suppose I give a blow to a body, a ball, for example, propelling it upwards. The impact is in the direction directly contrary to gravity—the attraction of the earth. Nevertheless, the ball ascends; it goes up a certain distance and for a number of moments of time, and then returns to the earth again. Now in this case, the impulse of the blow was, for this *instant*, greater than the attraction of the earth, otherwise, the ball would not have ascended at all. But in time,

the attraction will overcome any impulse that may be given to an ascending body. The impulse is strongest for the moment; but gravity, by lasting forever, and extending to all distances, will prove the strongest, and prevail in the end. So appetite is stronger, for the moment, though doubtless the pleasure of self-denial will be greatest in the end. *It* lasts forever.

28. In all cases in which we “resist temptation,” we really choose “the better part,” indeed, and that which will unquestionably produce the most happiness in the end; but we choose and act in accordance with the weaker motives, and resist or act against the stronger, and the force of will makes up and overcomes the difference between them. And the capacity thus to choose and act constitutes what we call “the freedom of the will.” It constitutes really volition as distinct from emotion.

29. That the brain itself is the seat or organ of volition, can hardly admit of doubt. And that the corpora striata are in some way connected with this function as an organ, seems to be universally admitted. In the lowest vertebrates, the brain proper—that which in higher animals becomes the hemispheres—is merely a thin membrane, an almost imperceptible film over the corpora striata. In that case, the brain can be only rudimentary, and perform no function whatever. And its position, in reference to the corpora striata, is certainly very significant of the fact that the functions of the two, when both are developed into working form and size, must be intimately connected.

30. But the volition, when it has been transmitted to the motor fibres of the nerves which act as commissures, to the ganglia in which the nerves of motion originate, is in its physical aspects, precisely like an emotion, and we have then the two orders of antecedents of action.

(1) Sensation, emotion, action.

(2) Volition, emotion, action.

That is, every action is preceded by a state of the ganglia which we may call an emotion. And this may be preceded, as in reflex actions, by a sensation caused by an external object alone, or it may be produced by a volition caused and produced by the mind itself. In the former case the act is purely reflex and involuntary; and in the latter case it is called voluntary. But in most cases the acts we produce are the result of the combination of both forces. Some external object, some condition of the bodily tissues producing an excito-motor emotion produces a tendency towards an act, not however sufficiently strong to overcome the inertia, the weight of the bodily organs, and that tendency is supplemented and helped out, by the mind acting voluntarily. But I doubt whether in this life the mind can act in that way without some emotion of a reflex kind, constituting what we call a "motive" and is really an emotional antecedent to volition.

31 But besides this emotional antecedent to volition, there is always an intellectual antecedent also. And in view of this intellectual antecedent we call the activity of the mind "choosing" or "choice." This intellectual antecedent is called "desire," or rather the purely intellectual act is an act of judgment in regard to that which we choose, and the emotional state which follows the judgment is called either "desire" or "aversion" according to the quality of the judgment. If we judge any object to be good we desire it; if in our act of judgment we affirm it to be bad we have a feeling of aversion from it. I am inclined to think that the act of judgment always takes place and converts the emotion, whether belonging to one or the other or the three primary classes

to which we have referred them, appetite, affection, etc., into a desire for the object before an act of volition takes place. But in many cases these mental acts take place so rapidly that we are scarcely conscious of them at the time, and retain no recollection of them afterwards. And hence the distinction between mere volition and choice, the latter implying as the former does not *appear* to, thought, deliberation, judgment.

32. But the desire when formed becomes an emotion of the same nature as the excito-motor or sensori-motor, (it is really ideo-motor) so far as its tendency to action is concerned. It may be so strong as to be a passion; but for the most part it is so weak as to require the co-operation of volition to produce any of those muscular movements which we call action. And of this, for the most part we are conscious. We think of an object, we judge it to be good, we desire it, we put forth the effort to get it, or delay to put forth the effort for prudential considerations until a more favorable opportunity occurs. In this latter case "we have the desire" as we say "without the will" to do anything, at present at least.

33. Hence, in choice, proper, there are two elements, (1) volition which implies desire, as an emotional antecedent, and (2) judgment, the act of judgment affirming that the object is good. Hence the order is cognition, affirmation, desire, choice. The desire always precedes the choice, so that we never do or can choose that which we do not desire, and for which we have not a desire based upon an act of judgment, preceding it as its intellectual antecedent.

But we are at present concerned only with the fact of volition as something distinct and different in kind from mere reflex emotion.

34. I have already expressed my opinion that nowhere

below man in the scale of life, do we find any proof of mind in the proper sense of the word; and no proof of mind because we find none of the acts that specially and unerringly imply the action of the mind, thought, reasoning, will, etc. But this is contrary to the common opinion, not only among men, but among philosophers as well.

The points I make are these:

(1) Mere sensibility and motion do not imply mind; for these we find not only in the lower animals but in vegetables, and even in inorganic matter as well. If they prove the existence of mind, then we have mind everywhere and in everything, and we cannot imagine what there is in man more than mind, which is above body and "mind" alike. It then becomes merely a question of words.

(2) A large part of the actions of animal life, and even of *human* life are undoubtedly reflex and might be, if they are not, performed just as they are now performed, so far as any external observer is concerned or can see, with nothing more than the mechanism and physiology of the nervous system.

(3) We have in man, through consciousness, a means of proof, and so proof itself, of something more than reflex action; proof of an agent which acts spontaneously, while all reflex action is from its nature physical in its character and conforms to the laws of physical action and motion.

(4) There is undoubtedly a class of reflex actions different from and higher in their character, than the excitatory and sensori motor, and which from their being thus higher and different, will of course more nearly resemble the voluntary actions that proceed from choice and volition. These actions have their origin, in all vertebrates,

in the hemispheres of the brain, as a physical organ of reflex action; the precise nature and limits of these actions have not yet been determined. But I think that they must include those actions which imply the influence of the brain proper in the control of the muscles, as in cases where all parts of the body or at least several parts that are remote from each other and not connected by nerves having their origin in the same centre, as either the spinal cord or some one of the ganglia of the sensorium, (with the exception perhaps of the *corpora striata*) are called into exercise in producing the act.

35. Flourens, Vulpian and others have accumulated facts in abundance to show that after the entire removal of the hemispheres—*corpora striata* and *optic thalami*—animals perform acts that have every appearance of being voluntary and designed for a specific end. A fish will swim, turn aside to avoid objects that are before him. A frog will stand (on a table) in a natural position, move to get out of the way of annoyances, raise his foot to brush off irritants from his side, and when put into the water will swim perfectly naturally to the side of the basin, get up on the brim and sit there precisely as if nothing had happened to him. Flourens says that he has seen birds from which the brain had been removed, stand on one foot, change from one to the other as if to rest, shake the head, place it under the wing in going to sleep, shake their feathers and make them stand on end, and even to smooth them down with the beak. And even some writers whom he mentions have argued from these acts that not the brain only, but the spinal cord as well, must be the organ of intelligence and will.*

*VULPIAN, p. 678.

But if we admit the argument in favor of animal volition, where are we to stop? Plants sometimes exhibit phenomena as wonderful

36. But this doctrine is disproved by the many cases *in man*, in which after an injury to the spinal cord had produced total paralysis, both of sensori and motor nerves below the injury, voluntary control over the parts of the body above it remained unimpaired. In such cases excito-motor emotions of the paralyzed parts can be produced, and even the parts seem to be more susceptible to such influences than while they were in uninterrupted connection with the brain. But there is no consciousness of either the sensation or motion, and there is no power of voluntary control of the muscles in the part thus paralyzed. And this I think must be regarded as conclusive proof that somewhere in the brain, including in that word the entire contents of the skull is the only seat of intelligence, consciousness and will.*

and as unaccountable, except on the supposition of intelligence and volition, as animals. Trees have been known to send all their roots in one direction for a distance of many feet, in some cases fifty or sixty, and even leap chasms in order to reach their proper nutriment, water, or something of the kind.

"In New England an Acacia threw out one of its roots across a hollow of *sixty-six* feet in order to plunge it into a neighboring well and spread out its fibres in the midst of the water." "Dr. Davy produced a horse-chestnut that grew on a flat stone, the roots passing *seven* feet up a wall then turning over the wall passed down the same distance to meet the earth." POUCHET, "*The Universe*," (Scribner, N. Y.) p. 405.

*I once knew a very extraordinary case which presented one feature that so far as I know has never been reported to the public.

A man in Ontario Co. N. Y., received an injury by which the spinal cord was totally severed under the fifth cervical vertebra. He lived for several years, and the only sensibility discernable in his body was a slight numbness in the outer side of his left hand. For about fifteen days after the accident he grew thin and poor very fast. After that he began to gain in flesh and became rather stout and full in habit than otherwise. This effect must be attributed either to an increase of the separate function of the spinal cord, or to the sympa-

37. It is also worth considering that what I allow to animals in the view presented is all that modern materialists of the school of Spencer, Maudsley, Darwin, Huxly etc., allow to man. It is precisely reflex action, just that and nothing else, though they do not call it by that name. In fact it could be nothing more without the existence of mind as a spontaneously acting substance, ontologically distinct and essentially different from matter or any material organ. They therefore cannot complain of this theory, however much they may object to the name I give it, or dislike the difference I make between man and animals.*

38. The brain in all animals below man, we must remember is comparatively small, especially the anterior lobes. Now suppose for a moment that in animals they seldom perform any function except what is by all wri-

thetic system. The surgeon in charge of the case, Dr. H. A. POTTER, was of the latter opinion. He lived in this condition some six or eight years. Being perfectly paralyzed in the entire body, he had of course none of the ordinary indications of occasion for the alvine evacuations. But he soon came to know as well as in health the recurrence of these occasions, and it *was by a peculiar sensation in the forehead.*

I speak of this as an extraordinary case, since the prolongation of life after such an injury for more than the ten or twelve days during which the emaciation goes on so rapidly, is I believe almost if not quite unparalleled in the history of disease.

*The word "mind" as they use it is merely an abstract term, denoting a "*phase of nature's order,*" (HERBERT SPENCER, *First Principles*, Preface p. IV) or "a force" which like heat, etc., is developed by nervous action," (HAMMOND, *Physics and Physiology of Spiritualism*, p. 13. See also the *Journal of Psychological Medicine*, July 1870.

Such a use of the word "mind" may give the appearance of holding to something more than mere physical action of the brain; but it can give only the appearance of holding and teaching such a doctrine.

ters ascribed to them as mere reflex action (omitting now their functions by giving intensity to the purely vital processes) and suppose again, that in some rare and exceptional case, on some extraordinary emergency, this organ should be excited to an unusual activity by some sensation produced by an external object, the result would be of course an act as unusual for that animal as the activity of that part of the brain itself. And what is more, it would be precisely like the rational voluntary acts of beings in whom that part of the brain is usually active and stimulated (as in the case of man) to such activity by insight and volition. No outside observer could tell the difference, or possibly discover any feature that would enable the mere observer to discriminate between them.

39. If now the reflex acts of the spinal cord and sensorium can be so like to the acts which in man proceed from intelligence and volition as to produce such an impression concerning them, how much more the reflex acts of the brain itself, which is confessedly the organ of reasoning and volition, even when no thought, calculation, reasoning or choice in the proper sense of the word occurs. The real difference as I apprehend between reflex and voluntary action is to be found in its first or efficient cause. In the one sense it is some external object acting upon the nerve centre, in the other it is the mind itself acting upon the nerve centre, both producing a state of the nerve cells so precisely similar that we have no means of distinguishing either these states or the act that proceeds from them, from one another.*

*MAUDSLEY, "*Physiology and Pathology of the Mind*," Appleton's ed. p. 93, says, "The instinctive actions of animals fall under the category of sensorial [sensori-motor] acts." This he gives as the

40. The argument in favor of the voluntary character of such acts is precisely the same *in form and force* as that which was at first used against the Copernican theory of the heavenly bodies.* Before his day, all persons believed that the earth was stationary, and the sun, moon and stars did the revolving. And *all the appearances* then known were in favor of that theory. The supposition that the earth revolved and they were stationary would explain the appearance just as well. And when the fact of the earth's revolution was established, it was accepted as the true explanation of what appeared to indicate a diurnal revolution of the heavenly bodies. Precisely so, the mere hypothesis of an ideo-motor, reflex action, will account for all the acts of animals that ap-

generally accepted doctrine. If so [and in this he speaks only of ordinary acts] why may not the more extraordinary acts "fall under the category" of ideo-motor?

* As matter of proof, one case is about as good as another, although less striking and instructive in other respects. CARPENTER relates (*Physiology*, Bohn's Edition, § 695), the case of his horse, which was seen repeatedly to go to the pump, and take the handle in his mouth, and draw water for himself and others to drink when they were thirsty. I saw a still more remarkable case, as I regard it. Sitting one evening at tea in my parlor with my family, I heard the door-bell ring. On opening the door into the hall, I saw the cat there, waiting to come into the parlor, but found no one at the door. The same thing occurred again, in a day or two. I immediately suspected the cat, and made arrangements to watch him. I soon saw him in the very act. He placed himself on the stairs, and resting one foot against one of the banisters, seized the bell-wire with the other and rang the bell. Neither the bell itself nor the door-knob for the bell, were in sight where he stood. This became a common event afterwards, so that whenever he wanted to get access to the parlor, and found the doors closed against him, he would go part way down the stairs until he could reach the wire that lead from the door to the bell, and ring until some one should come and open the door for him.

pear to indicate, and have hitherto been supposed to indicate intelligence and volition, as well as the supposition of intelligence and volition. However, we have not hypothesis only, but the acknowledged fact of ideo-motor action, and we have no proof, and no possibility of proof, of intelligence and will, or of anything else but mere ideo-motor action.

41. And to my mind, this view of the higher forms of animal instinct is strongly confirmed by the fact, that the examples that are cited stand alone and isolated. In the case of the horse, for example, that drew water from a pump described by Carpenter, there is no indication that that horse was more docile, or intelligent, than other animals of the same species. He performed no other act that indicated the amount of intelligence which was manifested in this, if it was, indeed, an act of intelligence at all. There was nothing to show, and there never is anything to show, in such extraordinary cases that the animal has risen to the level of intelligence implied in such an act. But with man, it is otherwise. In his passage from childhood up, as he attains the capacity to understand, and the ability to do any particular act, he reaches the level of that act, and can do, and does do other acts on the same level, or implying the same amount of intelligence. If now, these acts proceed from intelligence in animals, or be, in any way, anything more than mere ideo-motor reflex actions, we should expect the same manifestations of intelligence in the performance of other acts. But it never occurs.

42. We cannot, indeed, explain all, or any of these acts by telling how the external objects produced precisely such effects. We cannot tell all the physical changes in the nerve tissues, and trace the impression on the organs of sensation until it becomes transformed into the irrita-

bility that contracts the muscles, and produces the motion. We cannot tell why the brain should act in one case and not in another, and why one object should produce just this kind of effort, and another object just that kind. Nor can we tell why this object produces the effect on the retina of the eye which induces us to call it white, and that other object produces the effect which leads us to call it red. Nor can we tell why *assafoetida*, for example, produces a repellent effect through the olfactory nerves, while the rose produces one of an entirely opposite character. They are all, and alike, matter of constitution, and inexplicable in the present state of our knowledge. The interior mechanism of the nervous system, and the changes which it undergoes in the process of sensation, perception, insight, consciousness, volition, etc., is, at present, and probably must always remain, beyond our knowledge.

43. What we call "instinct" in animals, is nearly allied to what we call "genius," in man. I believe they are both of the same kind. A man with a peculiarly fine sensibility and delicate structure of the brain, can hardly fail to have a genius for something; that is, he sees quicker and feels more keenly than others, and this enables him to surprise them by his quickness, or surpass them in the extent of his performance in that line of action. It has long been admitted that the best poets and best artists are never the best critics, or best able to explain what they have done. It is about as difficult for them to understand how others cannot do as they do, as it is for others to understand how they do it. Genius, like instinct, is incomprehensible to its possessor. Doubtless superiority of insight constitutes genius. But with this superiority of insight there is also a corresponding intensity of the ideo-motor emotions, which the object

seen into and understood excite, and often there is the performance of acts that are little comprehended by the agent himself.

44. I have referred, in a previous lecture, to the ratio of the brain to the spinal cord, in the different orders of the vertebrates, varying, as it does, from the lowest of the fishes where there is scarcely any brain at all, up to man in which it is about twenty four times as large as the spinal cord. We should, therefore, naturally infer that animals are to an extent proportionately greater under the influence of the lower orders of motives than man, and that, in fact, their life is made up of and controlled by such motives; while in man, we should expect to find the life rising into the domain of rational motives, of intelligence and reasonable purpose. And in animals, mere instincts are not only more perfect in themselves, but clearer in their indication of the course of action to be pursued, and safer as a guide, than in man. In fact, they become to them "*a sense*," like sight and hearing, of which we can have only a very imperfect comprehension.

45. In this way we may account for the wonderful skill of insects, as the bee, in making its honey-comb, of birds, in constructing their nests, and even the more wonderful instincts, of hibernating animals and others that make special preparations for winter, apparently with a foresight and certainty of knowledge of the future which man does not possess, and cannot acquire. Objects and influences which produce but little or no effect upon him, or escape his notice altogether, produce in them, and upon their organization (made by the Creator in order that such things may guide and control them), an effect that man knows not, and can no more comprehend than the blind can comprehend the effects

of light on those that can see, or than the deaf can comprehend the actions of those that can hear.

46. Something like this occurs in human experience. We have all seen persons who have a peculiar susceptibility to what produces no effect upon others. I once knew of a woman who had such an antipathy to cats that she could not endure to stay in the room with one. And her susceptibility was so keen that she could perceive, by some means unknown and incomprehensible to others, the presence of such animals even though entirely concealed from her sight. The susceptibility of rheumatic persons to approaching changes in the weather is well known. It is, moreover, so commonly remarked that we are more likely to be thinking of persons when they are near, though unseen, and especially when they are approaching us, as if they had a "sphere," or an "atmosphere" of influence surrounding them, that I can hardly doubt there is something in it.

47. And in the same way, it has seemed to me not unlikely that many of the phenomena of animal magnetism and clairvoyance may be explained by reference to this class of phenomena in animal sensibility. I have never seen any such phenomena, and of course, do not feel prepared to discuss them. Doubtless there has been much imposture in connection with them. But from the accounts I have heard from others, I think we can hardly dismiss them without admitting that there is enough of fact in them to call for an investigation and some attempt at a scientific explanation. And it seems to me most likely, that by the means used to produce such states, there is developed a form of sensibility which is abnormal, and, at other times, inactive.

LECTURE XI.

VOLUNTARY ACTION.

I think we have seen sufficient reason to believe that there is in man an element of action different in kind from anything we find in animals below man. Volition is not emotion, and cannot be resolved into emotion of any kind or class. Whether animals possess this element or not, may be matter of doubt. I think that if we cannot deny it, we are certainly precluded, by want of evidence, from asserting its existence in them.

1. Volition, as an element of action, is an element of choice also, and choice, as we have seen, implies a motive. But this motive is not, in its *immediate* relations to choice, like either of the classes yet described; and since it has for its antecedent an act of judgment or reasoning, it is called desire.

2. Desire is different from appetite or affection not only in having a different antecedent, but also in its character. As we have seen, appetites, whether physical or spiritual—that is, mental desires—have for their antecedent only a constitutional condition. Affections have an act of cognition, but desires have an act of judgment. Hence we have:

Constitutional condition, appetite (excito-motor).

Act of cognition, affection (sensori-motor).

Act of judgment, desire (ideo-motor).

3. But both appetites and affections provoke and move us to the act of judgment which precedes and determines the desire. Thus, one is hungry; he thinks of the matter, concludes or judges that food is good for him under the circumstances; he *desires* it and takes it—if he can get it. So, one has an affection for an object; thinks of it, and concludes that it will be useful or in some way good for him, and *desires* it. And probably, neither the thinking nor the desire would ever occur were it not for the emotion preceding them. And generally, an appetite for a thing, as well as a benevolent affection, or hope, disposes us to desire the object, while emotions, in the same class, but of an opposite character, as fulness in reference to food, and hate or fear in reference to the objects of those affections, dispose us to aversion.

4. It sometimes happens, however, that the connection is reversed. We do not, of course, desire a thing *because* we hate or fear it; that would doubtless be psychologically impossible. But we do sometimes desire a thing *notwithstanding* it, considered merely in relation to the appetite or affection, does not excite any pleasurable emotion. We desire it *because*, though unpleasant, or painful, we know it will be good for us. In this way, we seek and use all those things which we regard as “*remedies*.” A man in sickness, seeks and takes a dose which is neither agreeable to the palate nor pleasant in its operation. But he judges it to be good for him—necessary though painful and unpleasant—as a means to a subsequent good.

5. Now we cannot say, in this case, for the reasons al-

ready given, that the volition is determined by the stronger motive, and is, therefore a mere resultant of the motives; for, from its very nature, the motive, or emotion of the lower class, the excito-motor and sensori-motor are stronger for the time being, though less enduring than the ideo-motor emotion that arises from consideration of the good which the remedy will accomplish for us in the end. Doubtless, the good that will come of the use of the remedy, is greater than the pain of using it, or we should never desire to take it. At least, what we think of and expect, as the result, will, in our estimation of it, be greater than the pain that is inseparable from the means we take to attain it.

6. In this light, we can easily understand why men so often choose wrong. I think there can be no doubt that the doctrine expressed by the old writers, "*omne quod petit, petit sub specie boni*" (whatever we choose, we choose because it appears to be good, or because we think it to be good at the time), is true beyond doubt. But as we have already seen, in considering the affections, there is nothing so bad but that it is capable of exciting some feeling of the nature of a benevolent affection, or wish, at least; so consequently, there is nothing which may not appear in some aspects, from some points of view, in some respects and for some purposes, to be good, and hence nothing which may not in this way become an object of desire, and as such, be chosen as an object to be pursued.

7. And of course, what is good in some respects, may be, and most likely will be, bad in others. And if anything is chosen because it is supposed or believed to be good when it is really bad, either in that same view of it, or in the view that *ought to be* taken of it, we may say that the person has chosen wrong. And here, in the

popular use of language, evil or sin has its origin, exists or comes into the world. And yet, a mere mistake, though it may lead to a wrong choice, can hardly be regarded, as in itself, a moral wrong, or a sin. The wickedness of the case depends upon the fact that under the influence of appetite or passion, we do not stop to consider and look at the thing in its proper light, or to acquire that knowledge concerning it which we ought to have had, and which we might, if we had taken the trouble to do so, have acquired.

8. Hence, the man of large knowledge, of much circumspection and foresight, is not only more likely to choose wisely, but he is much more able to do so. He not only can, but is more likely, to look at a matter in all its bearings and relations, and to choose in view of the greatest amount of good. And we see also how the emotions, passions and appetites, mislead judgment, and so, choice. Any existing affection for a thing disposes the mind not only to occupy itself with those properties and qualities of the object which tend to provoke us to desire it, but they also tend to stimulate and guide the mind to exaggerate these good qualities and even imagine such as do not exist. And thus, desire becomes, under such influences, almost inevitable.

9. Any object of desire is always regarded as an end. If we fix our thoughts upon an object as an end, we shall desire it, if we consider it good, but if we look beyond that object to something else, to which we consider the first object only as a means, it may cease to appear to be good, or desirable. The ultimate object which we have in our thoughts is really the end, or object, we are in pursuit of; its contemplation produces a rational, or ideo-motor emotion, which, under the law of such emotions, already laid down, increases in intensity

with the continued contemplation of it, the longer we think of it—if we only look at its desirable qualities, and the better we understand it, the more we desire it, until, in consequence of this absorption of the capacity for emotion, into this, our other feelings—excito-motor and sensori-motor, mere physical feelings and affections—are scarcely excited, or, if excited at all, are not noticed or regarded in the pursuit of the distant object.

10. It is thus by combination of intelligence and will that man becomes persevering and consistent in character. He pursues his object, though its realization may be far off in the distant future, amidst labors and discouragements, and if need be against opposition, overcoming obstacles, obviating difficulties, neglecting present ease, comfort and indulgence, gathering, as it were, his energies, that he may have them well in hand and completely under his control, until the object is attained. Even obstacles, by exciting emotions, are often made subsidiary by the conversion of the very emotion thus excited into forces that add to the energy with which he pursues the object he has in view.

11. The repetition of an act usually increases the facility with which it is done. This increase of facility enters largely into what we call "*habit*." And "*habit*" is often defined as the "aptitude or facility acquired by frequently doing the same thing." The word is also often used to denote "the power of habit," the tendency to do an act of any particular kind arising from having done such an act before. It is of the nature of a reflex emotion and may belong to, and be found in either of the three classes into which these emotions have been subdivided.

12. It seems to be a well established fact that the nervous tissues having been put into any special position

show a facility or proclivity to run into that position or condition again, so that any object causing a sensation differing but slightly from another object which has just produced one, the two sensations are likely to be precisely alike, differing not at all in character, but only numerically from one another. Thus suppose one has a dozen objects, as acorns or marbles for example, differing but slightly from each other; he, having no special occasion to scrutinize them closely, is not likely to *see* any difference between them; that is, though different in fact, they will produce sensations precisely alike. Or in other words, they, the objects, are so nearly alike that with the amount of attention ordinarily given them, the sensation which the second produces will, in consequence of this tendency of the nerve tissue be precisely the same in kind but numerically different from the first produced, instead of being that which it would itself have been if it had been the first instead of the second.

13. To the formation of habits then, there are two conditions, (1) the acts must succeed each other so often that the tendency of the nerve tissues to return to the former condition shall not have passed away and (2) secondly the amount of attention that is given to any act and the tendency to form habits, "*to fall into ruts*" and run in ever recurring channels, is inversely as the amount of attention. So that the more attention we give to specific acts the less we become "mere creatures of habit" as the expression is. And commonly the less of thought we exercise in the daily affairs of life, the more are we under the power of habit. This is not saying however that regularity and uniformity are mere habit, but only that the uniformity and regularity of life that comes from the fact that the person has no thought of any but the one way in which he does things, is merely the result of habit.

14. I have remarked that the power of habit is of the nature of the reflex emotions. Many, perhaps most of the physiological writers, think that this power becomes so great as to be the sole cause of many of the series of acts we perform. Carpenter explains mere walking in this way. And doubtless reflex action has much to do with it. When we are standing still the first effort towards trying to walk is doubtless one of volition. By this we move one foot forward and at the same time set the body in motion, moving the centre of gravity forward also. The foot that we move reaches the floor or the ground. The body, by the momentum of the first impulse, keeps moving and the centre of gravity is soon carried thereby beyond the point reached by the forward foot, and we should fall over forwards if the hindermost foot were not moved forward to strike the ground in advance of the other, and so on, the body keeps moving and the excito-motor tendency to preserve the erect position keeps the feet moving in turn as fast as either of them has fallen behind the line that is perpendicular to the centre of gravity in the body.

15. But I think there must be a continued effort of will also, although doubtless it is very slight, so slight as to be hardly a matter of consciousness. Of this I think we have abundant proof. In case of lesion to the spinal cord, there is paralysis of all the body supplied with nerves for any point below the lesion. And yet there is capacity, for excito-motor reflex action. The foot will move if tickled on the bottom. The sphincter muscles continue to perform their functions so long as the part of the cord below the injury continues healthy. But if the patient is put on his feet, and in danger of falling, no motion of the foot to restore equilibrium is ever seen in man, though such efforts do doubtless occur in the lower ver-

tebrates, as frogs, for example. I conclude therefore that walking, in man at least, always requires at each step some amount of voluntary effort. It is like many another act which, though feeble in itself, sets a much more forcible power in motion, and by a slight effort guides and controls it. But if the acts were *wholly* reflex, why or where would they cease? In conformity with the laws of reflex actions, that is those that are exclusively so, having *no* element of voluntary force, they cease when the antecedent ceases. In cases of excito-motor and sensori-motor emotions the antecedent is a sensation. In ideo-motor it is a thought, so that when we stop thinking of an object the ideo-motor emotions cease. But in the case of habit the force does not cease for the reason that the habit itself, the antecedent, does not cease. That is, the tendency to act and the facility in action which has been required does not cease with the action, or rather before the action, so that the cessation of the action is the result of the cessation of the force. On the contrary the cessation of the series of acts is itself as was the beginning, voluntary.

16. It is voluntary action and that alone which produces fatigue. Reflex and spasmodic action may produce exhaustion. That exhaustion produces or ends not in fatigue, but excitability and weakness, and becomes in some cases the restlessness that cannot cease action at least without voluntary effort to resist and control the excito-motor emotions; and in others the system itself seems to be exhausted into insensibility, or inability to rest. With voluntary effort, however, comes a sense of fatigue and weariness; a disposition to cease action and take rest. But so long as the reflex action continues to be sufficient to produce action without much, if any help from the mind, we have what the German writers call

the "play-impulse," the actions are a relief and a pleasure. But as soon as this impulse flags, or ceases, we must complement it with volition and a sense of fatigue is the result.

17. It is the same with talk also; for that is a kind of action. That which proceeds from mere sensori or excito-motor emotions acting on the olivaria ganglia and organs of speech, is not fatiguing. It is a relaxation and relief rather—to the speaker I mean. But the talking that comes of voluntary effort and expresses thought that has been carefully elaborated, arranged and fitted with appropriate words so as to be fit for instruction and use as a means of wisdom, is one of the most exhaustive forms of bodily activity. And even the mere excito-motor speech of scolding, faulting, swearing, as well as the sensori-motor talk which passes under the name of gossip, use up energy that might be turned to a better account. Some men there are, (and women too) who use up, in this way by scolding and fretting, energy enough before breakfast, to do half a day's work. And some there are who seem to let all the energy of their lives escape from the end of their tongues. Great talkers seldom accomplish much.

18. Before birth man's life is wholly excito-motor. In early infancy it is largely so; and though the sensori-motor actions begin soon after birth, the ideo-motor begin early, doubtless; but in childhood and youth the sensori-motor are likely to be the predominant emotions, with an intermingling of both the lower and the higher in less proportions. And it is in the maturity of manhood alone, that man rises to the predominance of the rational emotions, and the controlling influence of taste, conscience and judgment. Hence the child is constitutionally selfish, the youth impulsive, affectionate, buoy-

ant, and perhaps generous ; the man noble, the woman graceful, and both conscientious, self-restrained, and acting with a view to the future. The centre of infantile life is the spinal axis, that of the life of youth is the sensorium, while in the maturity of manhood's years, the centre rises to the brain proper.

19. And this is the order of the animal kingdom. In the lowest animals there is no life but excito-motor. Sensori-motor, however begins very low, and possibly with the lowest orders of the infusoria, though probably not. Ideo-motor appears certainly in the higher vertebrates. But precisely where it begins we cannot tell. And I think voluntary action, properly so called as I have described it, does not begin until we reach in the ascending scale to man himself. And thus we have each human being, beginning psychologically, as we know he does physiologically, at the very lowest step, the nerve cell, undistinguishable from that of a being of any other order, passing up through all stages in his growth and development, until he reaches that which is above them all, and becomes a rational, accountable being, capable of knowing and acknowledging his Creator and destined to glorify and enjoy Him forever.

20. I am inclined to think that in human life the first act of any kind is purely reflex, as in my estimation all the acts of purely animal life are. Beside the mere excito-motor and sensori-motor impulses already spoken of, which may, and in many cases doubtless do, occur without either intelligence or volition, and which would alone and of themselves produce motion of the limbs, there is, as I believe a first principle of action in all human beings, which is of the nature of a reflex emotion. It consists in a disposition to imitate whatever action we see or sound we hear, that arrests attention and pleases

us. This emotion, though apparently sensori-motor in its origin (by sight and hearing) becomes excito-motor in its influences. It may not be however, quite strong enough in most cases to produce an act without co-operation of will. And here in the co-operative act, in order to imitate some act or sound, seen or heard, is as I believe the first act of will, and the beginning of all voluntary acts.

21. This disposition to imitate is much stronger in infancy than in later years, and much stronger in some persons than in others. In some persons in fact, it is, in early years, through the period of youth at least, an almost irresistible impulse. But in infancy (as it seems to me) so soon as a child sees an act that pleases it, and has its attention arrested so much as to think of the act any farther than the mere act of perception, there arises the disposition to imitate it. This disposition though at first reflex is soon assisted by volition, and the act is afterwards repeated voluntarily when occasion requires, and the reflex element of the act, if any continues, is lost from consciousness, just as the voluntary element is lost from consciousness in the case of habitual acts as walking, selection of words in speaking, etc.

22. But I think we see certain traces of this same psychological phenomenon in the later stages of life. And in fact in youth and mature years, after we have come to the age of reflecting upon our mental states and operations, we often find ourselves making the attempt to imitate acts and sounds where there is no good reason for it, unless it be this constitutional tendency for doing so. But I have in mind another class of phenomena, which for aught I know may be peculiar to some persons. It consists in an impulse so strong as to be at least alarming, to do certain acts arising from the mere thought of

them in the presence of an opportunity and favoring circumstances. I remember once standing on a tower and looking off at the surrounding scenery, with a young gentleman of highly cultivated mind who told me that he scarcely dared go to the railing around the edge of it for fear he should leap off. The very thought of doing so, he said, seemed to come over him with an almost irresistible impulse to leap from the battlement to the pavement below. Another gentleman whose sanity could not be questioned, told me that he had often concluded never to shave himself again, for the impulse to cut his throat was so strong whenever, with razor in hand, he thought how easy it would be to do so, that he feared he might sometime, by a mere spasmodic jerk inflict a wound that would be fatal.

23. And to carry this matter one step further; it seems not unlikely, though I presume there is no way or means of positive proof of the fact, that the first strange or rash acts that manifest acute mania are of this kind. The mere thought of the act, even when there was no premeditated purpose to commit it, produces, in this state of the system, a tendency, or emotion, that becomes irresistible, chiefly because, in the diseased condition, there is no force of will to resist, and the whole force of mind and body is drawn in the direction of the act.

24. From this view, or theory of voluntary action, we might infer, what is otherwise, a matter of consciousness, that there is always a tendency of will, taking sides with any reflex emotion, and becoming apparently part of it. In such cases, persons are not usually of the opinion that they will to do, and do, because they will it, what they claim that they can't help doing; they can't because they choose to "can't." But I believe this to

be often the case, especially in the period of youth, or when persons are passing from the second to the third stage of life, above spoken of, that is, from that in which the sensori-motor, or affections, are the predominant springs of action, to that in which will and purpose prevail. Perhaps the man who, after a quarrel with his neighbor, and the conviction that the quarrel must be made up in some way, said to him, "You must give in, for *I can't*," is an example of what I am speaking of.

25. But in an earlier stage of life, that is, in infancy, we often have manifestations of another complication of will and emotion, that not unfrequently excites in me, with my view of the matter, the deepest interest and the most stirring emotions. It consists of cases, in which a parent, or other person having charge of the child, insists upon some act of obedience, and attempts to enforce such obedience by violence and torture, after the parent has produced in the child, by threats, etc., such a state of excito-motor feelings that the child can no more control its limbs and perform the act than it could carry a mill-stone. Many a child has been whipped to death for not doing what it could no more do in the state of feeling into which it had been thrown, by the very means, perhaps, taken to induce it to perform the act, than it could move, if its limbs were wood and stone, instead of bone and muscle. If there is anything that makes my blood boil, and tends to raise me to a pitch of emotion, when the laying of violent hands upon somebody, comes to be an irresistible impulse, it is a case like this.

26. There is another class of phenomena, which though very obscure, seems to have an important bearing on our theory of voluntary action. It sometimes happens that one set of nerves are diseased, while the others remain in

the full performance of their functions. Sometimes the motor nerves are paralyzed, while the sensory nerves remain in full vigor, and *vice-versa*. Now in some cases, where the sensory fibres have ceased to perform their function, the motor fibres remaining in good condition, the control of the muscles depends on the sight of the limbs. Thus, in *tubes dorsalis*, in which the posterior portion of the spinal cord is so diseased that no sensation, either of touch or subcutaneous feeling, can pass up to the brain, it is often possible to stand and walk, so long as the patient keeps his eyes fixed on his legs and feet. Or if the disease affects the arms, he can use them so long as "he keeps his eye on them." But the instant it is turned away, they become relaxed, and let fall whatever he may happen to have hold of. But sight of the limbs is essential; mere thinking of them will not answer.

This fact seems to indicate that an emotion of one or the other of the lower orders, excito or sensori-motor, is indispensable as an antecedent condition to volition.

27. The origin and use of language should be considered in this connection. The fact that man alone has a language, in any proper sense of the word, renders the inquiry into the origin and use of it far more interesting and important than it would otherwise be.

One theory is that the Creator gave man a language at first. This can mean only that He pronounced the words which were to be for man the names of things, and then, either at the same time, or just after, formed the names into sentences, by making other sounds which as verbs, etc., indicated the relations of things, and the influences which they were exerting upon each other. On this theory man's act at first, was a mere imitation,

and must have been largely the result of sensori-motor impulse.

28. But the tendency of modern science is not to accept this theory of the origin of language. Writers on the science of language are disposed to consider human beings as at first without language, although with the faculty of speech, and hence they assume the task of accounting for the origin of words. If we are right in our psychology thus far, it is comparatively easy to explain their origin, although our theory will differ somewhat from any *one* of those that have been proposed, and will in fact include them all.

29. Of these theories, there have been three that are radically distinct:

(1) That which Max Müller proposes to call the "*bow-wow*" theory. It holds that all the elementary words and sounds originated in attempts to imitate natural sounds. Thus, on hearing a cat mew, a sound like the mewling would be made, and that sound would be the name of the cat, etc.

(2) That which Müller proposes to call the "*pooh-pooh*" theory, which resolves all the first words of human speech into mere interjections—exclamations in the presence of an object that excites attention.

(3) Müller's theory, which Whitney, to pay him off in his own coin, has proposed to call the "*ding-dong*" theory. It grows out of a psychological theory different from that which I have presented in these lectures. Müller holds, by necessary implication, if not by express avowal, the doctrine of "innate ideas," the *generalia ante rem* of the Scholastic writers. Or, in a more intelligible exhibition of his theory, he holds that before any experience there are general ideas in the mind, and that sounds, purely arbitrary, as it seems, are made to express these

ideas. They are understood by others because they have the same ideas. The first words, on this theory, must have been *common* nouns, or *general* terms, and Müller confirms himself, in his theory, by the fact that these early roots, so far as we are able to discover them, were exceedingly vague and general in their signification. After a while, these words began to have both a noun, an adjective and a verb signification, and then, in the Indo-European languages, at least, they began to take different forms, in accordance with these different significations, as "*snow*," the noun, "*snows*," the verb, and "*snowy*," the adjective.

30. But I think we must give up the theory of innate ideas in any and all its forms, as a thing of the past, and having no more foundation in fact than the antiquated speculations of the astrologers and alchemists of past ages. And by consequence, the very foundation and cornerstone of Müller's theory of the origin of words goes with it. And, as I think we shall see very soon, we can quite as well explain the origin of language without it.

31. But I think that both of the other theories are true and by no means exclusive of each other. If we are right in our general theory of the origin of actions, we may apply it to the origin of words as well, and we should have both the phenomena in their order. If two persons were standing before any object which, as yet had no name, and that object should make any noise that should attract attention, there would be an effort to imitate the noise, and undoubtedly the sound then made would be "*associated*," as we say, with the object, and thus, by common consent, would become the name of it. It might be one syllable, and would probably be so, if the sound were one like the mew of a cat. But it

might be a dissyllable, if the noise should be dissyllabic, as in the successive, rapid bark of a dog. These words would be what the rhetoricians call onomato-poetic.

32. But again suppose two such primeval persons, to have their attention attracted by some object that, though it makes no noise, does nevertheless excite emotion; the emotion would most likely excite the vocal organs, and we should have an exclamation, varying in tone and what the French call "timber," according to the character of the emotion. And this sound, also, would doubtless, in the same way, be "associated" with the object that caused it; so that the sight of the object, and the thought of it too, would occasion a repetition of the sound; and the repetition of the sound would recall the thought of the object, and then we should have a word on the pooh-pooh theory of the origin of words.

33. We cannot deny, however, that these words would be intensely peculiar and individual, and thus apparently confirm Müller's objection, and afford occasion for something different. But at first, the sound might be either noun, adjective or verb; for in form, the sounds that perform these three functions would not then be distinguished, for the simple reason that the science of language or grammar had not gone far enough to distinctly recognize the difference between the three functions of words. And yet the second sight of the object that first occasioned the sound or at the sight of another object that was strikingly like it, the same sound would be made again, (that is, a sound *specifically* the same—*numerically*, of course, it cannot be the same), and now that sound—word, we may call it—denotes two objects, indifferently and indiscriminately, instead of one, and has passed from being a proper name, a mere individual

term, to a common noun, denoting a class. And, of course, a still further generalization would follow with every observation of an object belonging to the same natural genus as that which was first observed, and whose observation occasioned the sound that has now passed into a word.

34. I think we can readily understand that the origination of such sounds and words, would not be a very easy task, or go on very rapidly. I presume that the capacity for the diversification of sounds was not so great then as now, and that it has greatly improved by culture. This, however, was not the chief difficulty; sounds, to become words and parts of language, must not only be originated and made, but they must be remembered. And in this, would be a difficulty so serious as to retard greatly, the multiplication of words. Hence, as an inevitable consequence, the few that were at first invented and accepted as words, would be used to denote, each of them, a great many resembling things; and thus become, as they were when we first encounter them in the earliest monuments of language now in our reach, exceedingly general and vague, each word denoting many things, and things that are so unlike that we can now hardly imagine how one word could have been used to denote them all. But they could be so used then, simply because, in that early age, objects were not so sharply discriminated and outlined in thought, as they are now. And it is probably about as difficult for us to understand how they didn't discriminate them as it would have been for them to understand how we do.

35. The words thus originated, somewhere from three to five hundred in number, soon became divided into classes, one being used as nouns or subjects, and the other becoming merely predicates, soon ceased to have

any meaning as names of things at all. Some became and remain conjunctions, prepositions, etc., and others are lost or merged in the mere suffixes and affixes that go to indicate number, gender, person, mood, tense, etc.; and some became the terminal forms that distinguish nouns from adjectives, verbs, adverbs, etc., etc., in all the Indo-European and Semitic languages.

36. And this, which we have supposed to take place with the earliest inhabitants, is not altogether unlike what now occurs with each child that is born and grows up in society. It learns to speak the language of its parents. But how? Chiefly, it imitates the sounds which they make. But besides this, every child whose growth through infancy I have ever known, has invented words of its own, which it would persist in using for weeks, perhaps even months, or years, instead of the regular word used by others to denote the same thing, and in all cases, the words thus originated have come into being and into use, in the way I have indicated. Sometimes they have been so like the recognized word that we could easily suppose them to have been the results of efforts at pronouncing them. But in others, no such resemblance could be seen. And I once knew of two children, twins, that had between them so many words of this kind that they would carry on a conversation with one another that no one but themselves could understand.

37. In the use of language in adult life there is also an element of habit and imitation. Few persons, even the most thoughtful and reflective, ever get to the point of culture where they use words only because they understand them. Words at first are used because they are associated with and stand for the things they denote. But abstract terms denote no things, and even general

terms denote them so vaguely that children and persons without culture do not understand them. They learn to use them therefore, not from any appreciation of their meaning, but solely for their emotional effect. We see illustrations of this in the case of children, who will just as readily apply the most opprobrious epithets to their dearest friends as any other, if they have never heard these words used except when uttered in tones that indicate respect and affection. They have no idea of their meaning or import, but use them when they feel as somebody else felt when they were first used in the hearing of the child.

38. And hence, as action may be only excito-motor and instinctive, implying neither intelligence nor volition, properly so called; so speech also may partake largely of the same nature; and persons of but little intelligence, may sometimes, if not often, use words and sentences that imply an intelligence and comprehension of things which they themselves do not possess. It is a mere parrot-like repetition of what wiser persons have said. Nor is this all; I have no doubt—it is with charity and with *great diffidence* that I say it—that many persons who claim to be wise and to utter new and profound truths, are often led in this way to utter what they do not comprehend and what nobody else can understand.*

39. It is rather a pleasant conceit or fancy of Herbert Spencer's that the nerve force is at any moment a given

*WHATELY cites the following example given in CAMPBELL'S "*Philosophy of Rhetoric*:" "All the voices of the celestial joyfulness, qualify, comix, and harmonize in the fire which was from eternity in the good quality." And it would not be necessary to go far in the works of any *profound* metaphysician to find examples that are as good as the above for our purpose.

quantity to which we can give direction as we will. It constitutes much of what we call force of character. But any excitement of the emotions of either class, excito-motor, sensori-motor or ideo-motor increase this "nerve force." If the brain be large compared with the rest of the body, and the blood vessels well distributed for the circulation of blood through the brain, we can direct this increase of mere force, to the brain, and we have increased quickness and intensity of thought. Or if we are engaged in action rather than thought, it becomes an increase of power, and with a well-trained mind it increases the energy of both thought and action.

40. But if this excitement and increase of emotion comes upon us when we do not direct it to either thought or action, it increases as mere emotion, and tends to impair both thought and capacity for voluntary action. We become confused, stupefied, or perhaps frantic with meaningless and purposeless exertions. We can neither think nor act with our usual physical strength, nor yet so control our actions as not to do or say something that is absurd or ridiculous. I once saw two men present where an accident occurred putting in great danger a number of persons. One was slight of stature but with a comparatively large brain. He seemed roused both in mind and body to the pitch of almost superhuman exertions. He saw everything, knew just what to do and did it with a quickness and a force of which he was ordinarily quite incapable. The other was of a large body and rather small head. He was stupefied with the sight, stood still, said nothing and did nothing, and after the excitement had passed he had no distinct recollection of what had occurred. The former, from mental habit and constitution rose above the excitement, converted it into energy and was master of the situation. The other was

overcome by it and rendered helpless and powerless. And in such cases it seems but the work of an instant, the slightest exertion of will to give to the rising current one or the other direction. The one course makes the great man, that rises with the emergency; the other makes the man who, though but too often self-confident and boastful when little or nothing is required, is nevertheless very sure to disappoint us when much is demanded of him. The circumstances which overwhelm and embarrass the one, become the source of power and energy by which the other rises to the capacity for great deeds.

41. And thus *man* becomes capable of great things. No great thing is ever undertaken by one who has just foresight enough to see the evils in the way of its accomplishment, and not enough to overlook these and see the glorious result that lies beyond. I speak of insight and foresight and not of imagination. We can imagine any amount of difficulty in the way of what we do not really wish to accomplish, and any amount of benefits that are to come from what we have set our hearts upon. But then foresight or insight is a very different matter. It sees things as they are. It can look forward to, and lay hold of the great end or result, and turn all things into a means of its accomplishment. And in the pursuit of their object such men often become insensible to the demands of physical nature and to the claims of kindred and affection as well. Their whole life seems to be absorbed in the one ideo-motor impulse of pursuit of the great object that fills their heart and absorbs all of their thought.

42. It seems to me that at first and in the merest infancy life is purely excito-motor. Soon, in early childhood, it adds to this, sensori-motor, the sensori-motor element

being predominant. In *womanhood* sensori-motor life always remains predominant; but that state is distinguished from childhood by ideo-motor and voluntary elements controlling the life in conformity with taste and conscience. In *manhood* ideo-motor emotions and volition become predominant and the sterner purposes are softened, and the amenities of life secured, by the continuance of the sensori-motor emotions and by the exercise of the domestic affections.

43. The obvious inference from this view is that the life of woman is determined to a less extent by will and persistent purpose or choice, than that of man. And I think the inference correct in fact, though contrary to the common opinion of mankind. In fact nothing is more common in the popular interpretations of character than to mistake the persistent efforts of some mere constitutional peculiarity of emotion, for will, or wilfulness. Nothing is so persistent as the instincts of animals, and nothing has less of volition or rational choice.

44. I think there is another obvious difference between man and woman, which it may be well to notice here. Woman's brain is obviously smaller than man's, but in quality it is more delicate, more susceptible, and acts with greater rapidity; consequently it cannot continue to act so long without rest, when the activity is raised by force of circumstances or voluntary application to a very great intensity. Women are more inclined to insanity than men; and men are far more in danger of apoplexy than women.

45. And this difference shows itself all through life. In infancy girls are more precocious than boys, and the most precocious boys seldom make the greatest, or very great men. It is a trite proverb that "Valedictorians are seldom heard of after they graduate." They mature

too early to mature into the greatest strength. It gives them, however, the advantage at the age of their college course. But girls, as a general thing, learn faster than boys, until the age of eighteen or twenty, and until the end of that stage has been reached during which progress depends mostly on acquisition and retention. Then a change occurs; progress from thence onward depends on the powers of original thought; the understanding of things and not words only; the making of inferences from facts for one's self, and the application of principles to new cases. This requires the larger brain of man for its utmost success. It requires moreover the self confidence which man's position rather than woman's duties demands and is alone calculated to produce.

LECTURE XII.

MEMORY AND RECOLLECTION.

1. On the old theory of ideas, it was easy to explain memory. It was only necessary to suppose that "ideas" of objects are formed in the mind, and to suppose that these ideas might be retained in the mind, somewhere out of consciousness, when we are not thinking of them, and that when we recall them, we bring them from that place. It would be surprising as well as instructive, to follow through the history of philosophy, and see how this fancy (for I can call it nothing else), of something substantial, or at least, something that can be treated as a substance, in the mind, by means of which we imagine, reason and remember, has entered into the thoughts and speculations of men, and remains there doing its work of error and delusion, all unsuspected even by the most sagacious and skeptical. Thus, Sir William Hamilton, in speaking of memory says: "The fact of retention will not be denied." But *retention* implies something that is *retained*. He does not say so, and apparently has never thought or questioned with himself whether it does or not. But he assumes "the fact of retention," as indisputable, and then unconsciously assumes the reality of that which is retained; for in fact,

he could not deny it, after having admitted the reality of the act of volition. He then goes on to explain memory by means of the reality of these "concepts."

2. But if there are no "concepts," or "ideas," there is nothing retained, and if nothing retained, there is no "fact," or "act, of retention." And so, if we admit the reality of anything in the mind, whether "ideas," "notions," "concepts" or "conceptions," there is no occasion to depart from the old theories of memory, which certainly have this great advantage, that they are very plain, intelligible and easy of comprehension. But if we deny the reality of such media between the mind and the things it perceives, thinks of and remembers, we are forced to find a new explanation of the phenomena of memory and recollection.

3. The fact that the reality of such things as "ideas" would help to explain memory and other forms of mental activity, may, indeed, be considered as creating a presumption in favor of their reality. But it can be regarded as no more than a presumption. Scarcely anything is more common in the province of truth than to find a phenomenon which can easily be explained by the admission of a cause which gives no other evidence of its existence, while, on further consideration, we find other facts and phenomena that preclude the admission of the reality of such a substance. Most of the phenomena of light and heat are easily explained on the admission of a substantial but imponderable substance that is emitted, reflected, refracted, etc., and yet the science of to-day does not admit the reality of a such substance.

4. In considering the question of reality, it can make no difference by what name we call these inter-mental substances, whether "ideas," "notions," "concepts," or what

not. We will, therefore, for convenience sake, drop all other terms and speak of them as ideas.

I have already said something of the various theories of the nature and origin of these ideas in a preceding lecture (V). But I know of no writer who wholly, totally and consistently denies and rejects the doctrine of their reality. The old realists held them to be "innate," and many, accepting this theory, have held that they come from God, are part of God, are God Himself. Locke, as we have seen, held that they are formed in the mind, in the act of perception, and out of matter furnished in and by sensation. Reid denied that there are such ideas as Locke contends for, ideas of external, visible things. Cousin coincides with Reid in this, but holds that there are ideas of certain invisible, intangible substances. And in his view, these ideas are "furnished," made, or manufactured by "the reason," on occasion of, and as a condition to, the act of perception of external objects. Sir William Hamilton teaches that "ideas," under the name of "concepts," are formed—how he does not tell us—in the act of perception, which he calls "presentative" knowledge, and that they serve as a means of imagination and memory, which, therefore, he calls "*representative*" knowledge.

5. But what proof have we of the reality of such things as "ideas," or "concepts?"

First, of course, they are not objects of perception, like the objects in the external world. Nobody has pretended this. In the next place, they are not objects of consciousness. This has been pretended, and is, in fact, claimed by nearly if not quite every writer. But it is the common fallacy of substituting a theory for a fact. We are conscious of thinking of objects, even of invisible objects, as "time," "space," etc., but we are not con-

sconscious of any thing in the mind, as a means by which we think of them. It is mere theory—the merest hypothesis—to suppose that there is any such reality. And yet it may take some time, and cost some effort, to realize the truth of this assertion.

6. Then, finally, we do not know “ideas” as the causes of anything. We, in fact, know most objects as causes. Nay, Cousin insists that “causality” is the principle, and the only principle of cognition anywhere. We know external objects only by the sensations *they* produce, and of which, therefore, they are causes. So we know the mind as a cause of thought, the agent that thinks, etc. But there is no act, or class of acts, that *in the same way* imply ideas; because we never find any acts that are thought, or can be supposed to imply the reality of ideas, except when there is mind itself in action, and which, therefore, is an adequate cause for the phenomena; just as we never see any effect that we would ascribe to heat, except there is a heated substance abundantly adequate to the production of the effect.

7. “Ideas” cannot be proved to exist as the *result* of any process; for we do not know enough about any of the processes to be able to say, or to prove that they *produce* anything. We know, in physical matters, for example, that if two substances unite, they will produce a resulting something. And so of most of the processes in the material world; we know enough of them to be able to say whether they produce any result or not, and what that result is. But in the case of the mental processes, perception, imagination, etc., we have no reason whatever to affirm that they produce, in any way, any substantial things, that remain after the act has ceased.

8. We cannot, then, prove that “ideas” exist, either as causes, or as effects. All the phenomena or facts that

ever have been supposed, or can be supposed, to prove their existence, prove them to exist only as means or instruments by which the mind acts. Their existence, then, is only a theory, an hypothesis, not a fact, nor a matter of fact in any way.

9. Cousin, though maintaining the existence of certain ideas, as those of time, space, etc., has, it seems to me, put the question in a form that disposes of the whole subject. "Are they," he asks, "matter or spirit?" If matter, how can they exist in the mind, and how, even if they exist in the mind, can they be of use or help in the perception of material things? If they are spirit, then they are totally unlike material things; cannot be their representative, nor in any way assist in perceiving or remembering material things.* In either view, they are of no use as means to assist in the processes of cognition, remembering and thinking about external objects; and of course, therefore, all proof of their reality from *this source* is cut off.

10. But let us glance at Cousin's proof of the reality of such ideas as he believes to exist. He says as the first step, that "*we have ideas* of certain things not cognizable by the senses, as 'time,' 'space,' 'the infinite,' etc." But "have we ideas" of them? That we think of them, admits of no doubt. Does "thinking of them" imply that "we have ideas of them," if by the latter expression we mean anything more than by the former? To assume that it does is begging the whole question. Singularly enough, however, Cousin does not address himself to this question at all, he merely assumes it as

* "*Lectures on the History of Modern Philosophy*," Lecture XII. Appleton's Edition, Vol. II, p. 323. "*Psychology*," Henry's Edition, Chapter VII. The argument as given above is abridged and condensed from Cousin's words.

admitted beyond question, and then proceeds to account for their origin. Like Hamilton, in the case of "retention," already spoken of, Cousin seems never to have thought that there is, or could be a question as to the reality of "*having* an idea;" for if we have an idea, then there is an idea which is "had," and so it must be a substantial reality.

11. Cousin cites such words as "space," "time," "infinity," "personal identity," "substance," "cause," "good and evil," * as examples to his purpose. He claims that they stand for and represent things; that the things for which they stand are not cognizable by the senses—we cannot see them, touch them, etc., etc. But "we have ideas of them," and therefore, we have "ideas" not derived from sensation. That we think of such things, is admitted; the very fact that we have words for them, proves that; and the inference, which is the really legitimate one in this direction, that, therefore, we think of things that are not sensible, is incontrovertible. And as substantiating his theory of ideas, he takes great pains to prove that what these words stand for are realities, whose existence cannot be denied or doubted.

12. Now we may admit this part of his argument, without stopping to inquire how far the words given above are positive or negative, abstract or concrete. But we claim what no one will deny, (1) that thinking of them, does not prove that we "have ideas of them," if by "having ideas of them," anything more is meant than the mere acts of thinking of them, and (2) the fact of our thinking of them does not prove that they are

* I think the student will have no difficulty in accounting for the origin of these words, without the hypothesis of "ideas," if he has well in mind what has been said in the preceding pages of these lectures.

realities. We have seen that, by imagination and fancy we can think of a great many things that are not real, and of which some at least are physically impossible ; as witness the monsters of ancient fable and of mediæval superstitions.

13. I cannot but regard Cousin's effort to prove the reality of ideas as a failure. It is either a complete begging of the question, or a mistaking of the proof, as we may happen to regard it, from one point of view or another. Nor do I know of any effort that has been made, that can be regarded as more successful than his. I cannot even imagine one that affords the slightest prospect of succeeding at all better. And the absurdities arising from the supposition of the reality of ideas in any such sense as his use of the term implies, or in any such form as to be of any use in explaining memory, are so many and so great that we must abandon all hope of aid from the source.

14. Memory is closely allied to consciousness. In consciousness we know that we are *now* thinking, imagining, etc. ; in memory, we know that we *were*, at some time past, thinking, imagining, etc. And thus memory is to a past state of mental activity as consciousness is to a present state. And hence the reason for the assertion that consciousness is an essential condition to memory, so that anything of which we are not conscious when it occurs, cannot be a matter of memory or recollection afterwards. For this, the reason will be obvious soon.

15. In another view, memory is the recurrence of any mental state or act, or rather the recurrence of the mind to that state, with the knowledge that it is the same as that which had occurred before. And here we must notice the difference between *numerical* and specific or individual identity. In mere transient phenomena like an

act of thought, numerical, or individual identity is impossible. I strike a blow, for example; *that* blow, that is, a blow numerically the same, cannot be struck again; one just like it can. Hence, strictly speaking, a mental act, a thought, etc., can never recur. It has no substantial reality, like the objects of sight which daily recur to our vision as we pass by them. In the case of mental acts, therefore, all that there can be is specific identity, or exact resemblance without numerical identity, or identity of object at all.

16. Now let us suppose that we saw an object yesterday; we see it again to-day, and in doing so, we remember that we saw it yesterday. Now, what is this "remembering that we saw it?" It is merely the act of knowing that we saw it yesterday superadded to the consciousness that we are seeing it to-day, and the judgment that it is the one we saw yesterday. And this act in relation to the act of yesterday, is very much the same as our consciousness of seeing it to-day is to the act we are performing to-day. And this act in relation to the past act of the mind is memory, and is all that there is of memory, properly so called.

But as I have said in a previous lecture, imagination enters largely into what is called memory. We see an object to-day, we remember having seen it yesterday, and immediately we imagine it as it looked then and call the whole complex act memory. And perhaps it is best to continue this use of words. And then we shall have memory as a term used to denote a combination of two or more forms of mental activity.

17. And this leads me to point out what in this use of the word must be regarded as *false* memory as distinguished from true. False memory is merely a trick of imagination, and one moreover to which all persons are

very liable. Any effort to recall or remember is pretty sure to stimulate imagination until we imagine what we try to remember, and then we easily pass into the belief that we remember it. It is under the influence of this tendency of the mind that persons who tell a falsehood, and especially if they repeat it several times, are in great danger of coming to believe it true. Many a man will swear to an event that never occurred, because he has so often imagined it that he has now come to believe it. Anything that stimulates imagination is likely to produce false recollection.

18. The remedy for this source of error is two-fold. (1) to constantly guard against thus corrupting our recollections. (2) to be constantly reasoning about what we suppose we recollect, in the same way as we do about what we suppose we see in false perception. Events have certain relations to one another; facts imply other facts, and when taken together are found to be consistent with one another, and to form a complete, harmonious, complex whole. If then, in our recollections we seem to remember what also seems unlikely or improbable, we should test it by reference to other facts whose reality is indisputable; or by comparing our own recollection with that of other persons.

19. There is another element in what is ordinarily called memory that should not be overlooked. Recurring to a form of expression already used, by which we speak of an act of memory as the *recurrence* of an "idea," a "thought" or a mental act, we should say that with each occurrence the act of thinking it becomes more easy until it seems as though what had taken a long time at first is at last but an instantaneous glance. Thus a mathematical demonstration which at first took several hours perhaps, may often be recalled in an instant, so

that it seems to be entirely present to the mind at once. This is a matter of common experience. And it will often happen that a thought comes to us so quick and so easily that we think for the moment, that we must have had that thought before, and stop to consider and try to recall when or where it was.

20. It seems to be established that every state of mind, and every act of thought has a state of the nervous tissues peculiarly its own; so that when one occurs the other will occur also. If now any particular state of these nerve cells occur to-day, and we are conscious of the thought or mental act which it accompanies and conditions, and the same state—same specifically—(for numerically the same one cannot occur again)—occur to-morrow, we shall have the same thought, with the addition of memory that occurred yesterday. But these acts of consciousness and memory are thus dependent upon a modification of the nerve cells also, so that the mental act without consciousness or memory, if that were possible, would have a condition of nerve cells somewhat different from what it would be if there were consciousness or memory.

21. If therefore we would resort to a mathematical device to illustrate our meaning, we might say, let the state implied in the act itself be denoted by x and the consciousness of the act by y , then at the first occurrence of the mental act with consciousness of the act, we should have, to represent the condition of the nerve tissues, $x+y$. At a second occurrence of the act we should have $x'+y'$ with the addition of some other element as z , thus $x'+y'+z$; and then on a second recollection of it we should have $x''+y''+z'+w$, or some other letter to denote the act of remembering that we had once before remembered the act, etc.

22. Let it however be distinctly understood here as elsewhere, that I use these physical illustrations as illustrations only. In some cases it is true that I appeal to facts as proofs—facts in physiology as proofs of facts in psychology. But in all such cases I appeal only to what is ascertained and admitted to be fact beyond dispute. In others, like the one just given, I allude to what may be supposed to be a fact in physiology to illustrate and explain what is known to be a fact in psychology. We know that when we perceive an object we are conscious of perceiving it, and that the act of perceiving and the act of consciousness are two and distinct acts. So, too, when we remember the act a third element is added. We may or we may not perceive the object at the time we remember having seen it; that is, we may either see it again and remember that we have seen it before, or we may remember having seen it when we are not seeing it again. But in either case the act of remembering becomes a third element, and is as if there were, as most probably there is, the change in the nerve tissue I have supposed.

23. And in this way we can also explain the increased facility with which thoughts occur to us for the second time, as in acts of memory. Starting with the supposition that the nerve cells have a peculiar condition for each thought or state of mind, it is according to the analogy of well established facts, and in itself highly probable, that the nerve cells after having been in any one particular condition will, with greater ease and rapidity be put into that condition again. And thus much of what is called memory will be explained as a phenomena of physiology. And as a consequence we shall see that much of what occurs in animal life below man and is thought to imply and prove the existence of memory;

may be only the physiological fact referred to. An object produces its effect upon an animal on the first occasion of his seeing it, it produces the same effect more readily and perhaps with greater intensity the second time, and we say he remembers the object.*

24. This physical hypothesis helps to explain another phenomenon which has been called "the association of ideas." Thus, if we remember a place, we are likely to remember the persons that we saw and the scenes that occurred there. This is said to be because the idea of the place is associated in the memory with the idea of the persons, events, etc.; that is, the ideas are so close to each other in that fancied "chamber of the mind" which we call memory, that we can hardly take up the one to look at it without taking the other also; certainly we could not find the one without seeing the other.

25. But the hypothesis of ideas is a mere hypothesis, and if it does in some cases help to explain phenomena which are real, it is not thereby proven to be real. Nor, now that we know it to be only an unfounded hypothesis, is it of any value as an explanation. But on the physical hypothesis, the hypothesis itself is so in accord-

*This was written some five or six years ago. But I find that MAUDSLEY, "*Body and Mind*" is beforehand with me in publishing the opinion. He says p. 24, Am. Ed., "From the way in which they [metaphysicians] usually treat it, one would suppose that memory was peculiar to mind. But a little reflection will prove that it is nothing of the kind. The acquired functions of the spinal cord and of the sensori ganglia obviously imply the existence of memory." And on p. 26, "To my mind there are incontrovertible reasons to conclude that the organic conditions of memory are the same in the supreme centres of thought as they are in the lower centres of sensation and reflex action." And again, "Like the brain, the spinal cord has, so to speak, its memory." *Physiology and Pathology of the Mind*. Appleton's Ed. p. 67.

ance with known facts, that we may regard it as something more than merely probable; and it moreover fully explains the phenomenon. Thus if we saw a person in a particular place, that state of the nerve cells which accompanied and conditioned our seeing the place would have been so related physically, to that which accompanied and conditioned the seeing of the person, the hearing what he said, etc., that the recurrence of any one of them could hardly fail to produce a recurrence of all the rest. In fact they are all but parts of one comprehensive whole, and by voluntary effort we hold on to the one we have, until the others return also.

26. Now what is it that we do when we try to remember? I think that in the first place we imagine as nearly as we can that which we are trying to recall. And if the thing itself be not an object of imagination—that is, not a sensible object—we imagine something that was a circumstance of our former thinking of it, the place, persons, objects or events most nearly connected with it. By this act of imagination we bring the brain as near as may be to that state in which we remember, that is, have the same thought, with the knowledge that we have thought the same before. From this position of imagining, the brain easily passes into that of remembering that which we wish to recall. But the danger is—and it is very great—that we shall mistake the imagining for the remembering the thing we wish to recall. And I suppose that all persons find that, in regard to objects and events long since passed, as well as those that were not carefully noticed at the time of their occurrence, it is often impossible to distinguish between remembering and imagining, so that we often mistake the latter for the former.

27. And it seems highly probable that these conditions

of nerve cells come in series determined by laws of their own as well as by external objects. Thus, if I see in order one after another, objects white, red, black, etc., the order of the external objects doubtless determines the order of the conditions of the sensory tissues on which the successive sensations depend. And yet the tissue itself, has a law of its own as we have seen, whereby (1) the sensations cannot succeed each other at the rate of more than about ten per second and (2) if they continue too long, they cease to be matters of consciousness or means of perception at all. And in the brain something like this is not improbable. A mathematical absurdity as a space enclosed by a single straight line, may imply a state of nerve cells as impossible physically as the object described is impossible in the nature of things.

28. So, too, in those processes of thought which we call reasoning or ratiocination; their order and relation may, not unlikely, be determined by conditions, compatibilities and incompatibilities, in the relations of the physiological states which accompany and condition them, as well as in the relation of the thoughts themselves, one to another, on which what we call the laws of reasoning depend. Thus, if we have the formula, A is B, B is C, therefore A is C, we know at once, by the objective laws of reasoning, and of thought, that if each of the above premises be true, the conclusion A is C is true also. But it may be, that by the disposal of a wise and beneficent Author of our nature, the brain has been so arranged that the state produced by the first premise and the second following it, does of itself tend to run into the state accompanying the conclusion, and cannot run into its opposite after the other two.

29. And there may be certain series of states through which the brain must go, to get from one state to

another. As any particle of matter must go through certain transformations before it can become a part of the living tissue of the human frame, or as the flower must go through certain stages of growth and transformation before it can become the ripened fruit, so it may be that the brain must go through certain intermediate stages in passing from some states to others, corresponding with the processes of reasoning of which we are conscious, and which we describe from a psychological and logical point of view.

30. There seems to be a very important difference between the memory or recollection of a thought and that of a sensation or a feeling. In the former case, the thought itself recurs, but in the latter, the sensation, or feeling, does not recur. Something yesterday produced a sensation of pain; I remember it; but I do not feel the pain to-day, at all. What recurs is not the sensation, but the thought which I had of it at the time.

31. It is, indeed true that there may be the recurrence of feelings, painful and otherwise; but in this case, the act of memory operates as an intellectual antecedent, and the feeling is ideo-motor. Hence it is seldom the case that the recollection of anything that gave us, or was accompanied by, any very deep or strange feelings will occur without producing something of the feeling we had when we first experienced it. It may be similar, but not the same. Physically, it will belong to a different class, if it was at first excito or sensori-motor; though if it were ideo-motor then, it will be of the same class now.

32. There is some change in memory, as persons pass from infancy to old age. In early life, we remember *facts* better than *principles*; doubtless, it is because we understand them better. And as a general rule, we

never well remember what we but imperfectly understood at the time it occurred. And when this principle is carried to its ultimate limit, we arrive at the conclusion that there is no possibility of remembering anything *after* its occurrence, of which we were not conscious *when* it occurred. For memory is the knowledge that we have of what was a former state of the mind. "We remember what we once knew," and only that. Hence, if we did not know of any state of the mind at the time, we cannot remember it—the act would not be memory, but original cognition—consciousness. We can, however, easily imagine what we never knew, and as easily mistake the act of imagination for an act of memory.

33. As persons grow old, we often find them remembering what occurred earlier in life much better than the events of the day, or even the hour before. I think this must be attributed to the fact of a change in the susceptibility of the nervous tissues; earlier events made a "*deeper impression*," as we say, and therefore, remain longer. Or, in other words, the tissues more easily return into their former condition.

34. There are some writers who hold that there is no one condition of the tissues to which the brain may not return in after life with recollection that it is but the repetition of a former condition, and so a memory of a former event. In this view, no one fact or thought is really and ultimately forgotten. There are none that may not on some sudden emergency, some case of surprise, excitement or danger, be recalled and remembered. Some extraordinary examples of this are on record. We have many cases of persons, who, after having lost consciousness in drowning, have been restored to life, and who relate that at the last moment before unconscious-

ness, they seemed to recollect, in the instant, *everything* that they had done or said, or that had occurred in all their lives. So, too, in some forms of insanity, persons have recalled languages which they had learned in early life and afterwards forgotten. And other cases of the kind are recorded in abundance.

35. Though I have spoken so much of memory as a function connected with the activity of, and changes in the brain, I do not wish to have it understood that I consider it exclusively a physical function. Doubtless there is something *like* memory in the lower tissues, as I have said ; and much that has been thought to imply memory, is merely, purely and exclusively physical. But I think that the phenomena of memory, as seen in *human* consciousness, imply an activity of mind as fully as any other class of mental acts, though not so obviously as those of volition.

36. Acts of recollection, or voluntary efforts "to recall," as the expression is, "former states of the mind," whatever may be the real nature of the effort, does as I think inevitably imply an effort of will ; and an effort of will, too, that implies some change in the mind itself, making up memory, by which that particular form of effort is possible and without which it could not take place. Of course, the effort to recall, or think again, implies, in the mind, some remaining effect of the first state, or it would not be memory or recollection. In the very act of memory, as well as in the effort to remember, or recall, or better still, perhaps, to reproduce past states of mind, there is something different from the mere facility—increasing with each occasion—with which the nerve cells return to a former state or mode of action ; for in this case, it must exist before their return to that state, and as a cause of their returning to it. It is not,

in memory, the external object causing itself to be perceived again, though with that act of *re-cognition*, we remember the former; but it is the mind itself, recalling the state in which it was when the first act of cognition took place, and by doing so, reproducing the state or activity of the nerve cells, which the object itself, on that occasion, produced.

37. It seems to me, therefore, that if we should make memory a mere physical phenomenon, we should either overlook and ignore the distinctive character of that class of acts, or involve ourselves in the absurdity of making a thing the cause of itself.

38. If, on the other hand, we accept, what seems to me to be so irrefragably demonstrated, the fact that each act of thought, each emotion that becomes a matter of consciousness, each act of volition that we put forth, produces an effect in the mind, and upon its very substance, changes it, in some way unexplained, and evidently inexplicable by any means of knowledge we now possess, we have an explanation of the phenomena of memory. And we have more: we have the fundamental fact on which education and the formation of character depend. The mind is changed by each and every one of its own acts, and by bodily acts only in so far as they become its own and enter into consciousness. Hence, it is constantly changing in some direction, either growing towards, and being educated up to, some state or condition which we call character, and which makes our worth or worthlessness, or it is being debased, and proceeding in a downward tendency to utter demoralization and worthlessness.

39. Perhaps a closer analysis of the act of recollection will be worth our while, in view of the importance of the connection of it with the matters just spoken of. To

any act of volition, and as a condition precedent to its existence and indispensable to it, there must be some thought, or, as most writers would say, some "idea" of the thing to be chosen. Now, I wish to recall an event that occurred yesterday, we will suppose. Doubtless, the *physical* organs, brain, etc., are not in precisely the same condition as they were when I was conscious of witnessing the scene. But what I wish or desire *directly*, is to think of it as it then appeared to me; but there is incidentally involved in my doing so, and without consciousness of it on my part, the putting of the physical organs into the same condition as they were in then. Hence the two elements, mental and physical; but in this case the mental must precede the physical as its cause; whereas, undoubtedly, the physical preceded as cause the mental element, yesterday when I was first led to think of the event. Or, in other words, in order to recall the thought of the event, the event itself must have produced, when first I witnessed it, some effect in the mind itself, in consequence of which, the mind can so far, and in such wise, think of it as that its thinking of it shall be the antecedent and cause of the fuller thought which we call recollection, and of course, therefore, of the state of nerve cells that accompanies that recollection.

40. This view is instructive and impressive in many ways. It teaches us the importance of education in the broadest and most comprehensive sense of the word. It points more directly, I think, than any other fact of psychology to the immortality of the soul, and presents to our consideration, the body as a mere temporary expedient for the preparation of the soul for another and higher state of being. Like the womb of the mother, it sustains the soul until it can live by itself, and in the

exercise of its own organs. And it shows us that every moment and every event is important to us. Not a thought or a feeling, not a word or an act, that does not leave its effect behind, fitting us for a higher or lower state hereafter; for happiness in the possession of wisdom and holiness, or misery, in the remorse of evil deeds—time wasted, opportunities neglected, and means misused and misspent.

41. After this review of the several kinds and forms of mental activity in detail, there are several observations of a general character that we may make in conclusion.

We are not to suppose that these forms of activity occur only, singly and alone, in succession one after another. We have seen that consciousness never occurs except in connection with some other form of mental activity. The same is true of memory. We never remember without some imagination, insight and reasoning. It has sometimes been maintained, that the mind can do but one thing at a time. But I can see no good ground for the assertion. It certainly is not in accordance with consciousness, or the common opinion of mankind. I think it gained whatever of acceptance it has received at all, from *reasoning* concerning the mental acts, as if the mind were material, or acted under the laws and conditions of mere material substances. It is doubtless difficult to conceive, or think of anything as performing more than one thing at a time, except as we think of it as made up of parts, or organs, each one of which may be differently occupied at the same moment. But our difficulty of conceiving of a thing that involves no contradiction in terms, is no proof of its impossibility; it proves only our want of experience in that kind of thought.

42. The great difference among men, in respect to intelligence, depends, for its *physical cause*, upon (1) the size, and (2) the activity of the brain, and (3) difference in the shape of the brain and in the distribution of its parts. And the difference between what we call an intelligent man and one who is dull is explained *psychologically*, by the greater number of the simple forms of mental activity above described that are going on at the same time. And the number that will go on at the same time, will depend, I have no doubt, on both the size of the brain and its activity combined. Men of poetic or emotional genius often have small brains of great activity. But men of greatness in other departments, as Bacon, Cromwell, Cuvier, Franklin, Webster, etc., must have large brains, also. And a large brain, other things being equal, seems capable of carrying on the usual processes of perception, imagination, memory, reasoning, forecast, etc., at the same time to a greater extent than smaller ones. It is thus that such men see everything and understand everything, as they go along. They are observant, circumspect, thoughtful, always growing in wisdom. They talk less than most persons because they think more.

43. There is always great difficulty in understanding the character and mental processes in persons whose minds are unlike our own. Those that are far above us we can never understand and appreciate. But if one is merely unlike—poetic when we are prosaic—or the reverse, it is well to remember that there is no one so dull but that he is poetic or witty at some time; nor any one so brilliant, habitually, that he is not sometimes dull. Let one study, and, as the artists say, “make a study of” such *unusual* forms of mind, and he will have in them the means of understanding those in whom these forms

of mind, however unlike his usual habit, are nevertheless the normal and prevailing state.

44. So again, in regard to the dullness of those that are below us. We have in some of our more stupid hours, experience of what may be for them their most brilliant moments—the periods of their greatest mental activity. In profound sleep, we are all equally dull and stupid. As we awake and arouse from that state, we pass through all the stages that anyone ever experiences until we reach the highest, *we* ever attain. More brilliant persons, however, rise as far above us, as we do above the more stupid whom we surpass.

45. When we are awake, the thoughts pursue, during successive moments and hours a certain continuity and order that seems to imply some relation between them and a determining cause somewhere.

(1) In the first place sensation, and perception ensuing therefrom, is a determining cause. What we see we think of more or less. Our perception of objects and events is determined by their relation and order. We see them where they are, one above another, one at the right of another and that other on the left of it. So events occur one after another, and we see them accordingly. This gives to our thoughts so far as their order is determined by this cause, the order of facts and events in nature, and therefore a natural and rational order.

(2) Again, beyond doubt, insight is a determining cause. This is especially apparent in imagination, so that in acts of this kind we group together things and properties according to their nature and compatibilities. When this condition is voluntarily departed from, we have the form of imagining called fancy. It becomes play or amusement. But when we are under the influences of any deep or strong emotion, we are too earnest for fancy, and are apt to become intensely imaginative.

(3) I have no doubt that the very constitution of the brain itself is in some measure a determining cause of the order of thought. Of this I have said all perhaps that is necessary. Whether at first and before any experience there is a greater facility for passing from any one state into any one out of many, than to another of them, we perhaps do not know at present. But after experience in mental activity we see, beyond a doubt, that there grows up facility of running through a series of states in the same order, constituting habits, or as it is sometimes called "*ruts*" of thought.

(4) And finally we have repeatedly seen that will is itself a force that guides and directs thought. That is the mind directs itself, and is to a considerable extent self-directed in thought.

46. Now in dreaming, the first and last of these determining causes cease, and to a considerable extent the second also. Dreaming is undoubtedly occasioned by some sensation, for the most part one of uneasiness or distress, in the subcutaneous tissues, and is therefore the result of a sensation in the general sense extending up the spinal cord, and keeping it or some part of it from rest or which is the same thing keeping it in activity. This activity will of course be, thought, of which there is some consciousness, since there is recollection of it, to some extent at least, afterwards.

47. But as both the special senses and parts at least of the hemispheres are asleep, there can be none of the regulating influences exerted upon the form and order of our thoughts which come from perception and will, and very little from insight. But with sensation in either of the five special senses or volition we at once awake and thought resumes its natural order.

48. I think that both the character and order of the

thoughts or images rather, (for that is what they really are) in dreams are to a considerable extent determined by the character of the sensation that produces the dream. If we are cold we are likely to dream of storms, ice and snow, or of being exposed in a chilly day without sufficient clothing. If hungry we are apt to dream of eating or of something to eat. If oppressed and troubled in breathing or if weary from sleeping too long in one position, we are likely to have what is commonly called night-mare, and dream of being found, or engaged in performing some manifest impossibility.

49. Again, if any particular subject or train of thought has been occupying the brain intensely or until it is weary, the brain itself may be ill at ease and keep the sensorium awake and active also. In that case we are likely to have a recurrence of the thoughts and images that occupied our waking hours. And there can be no doubt that both in this case and the other, in which the bodily condition is the cause, the order of succession in the thoughts or images depends very much upon the greater ease with which one state of the nerve cells passes into that which follows than into any other. And even in this respect the order may vary. It may be easiest, for example, to pass from one state as *a* into another as *b* at one time and into some other as *c* at another. But I think that the one principle, if not the only determining cause of the order, is the purely physical one I have indicated, namely, the facility of passing from one state into another.

50. And even in our waking hours and in the most resolute part of our lives, Will is, I think, but a small and weak force in the production of human acts, and the formation of human character. But then it is the engineer who rides on his machine and directs forces that

are incomparably stronger than himself, and thus guides them and controls the result as completely as though he were the force that draws the train and propels the machine. Or in another figure it is like the rudder of a ship, small in itself, yet able to control the course of the mass to which it is attached, and thus it is really the guiding force which directs the course of the vessel, regardless, and to some extent in spite of, the current of the waters or the course of the wind.

51. In most cases and especially in early life, it is just enough to turn the balance in one direction or the other. But the moment the balance has been turned or the course directed, the mass set in motion acquires a momentum, and the emotions become a moving force compared with which in point of strength, will is insignificant. Or rather—for all these are but figures and metaphors designed to suggest what perhaps cannot be literally and explicitly said—it seems as though when we, that is the will, by an act of volition, have set ourselves in motion in any direction, the emotions of whatever kind, not only co-operate in the same direction as propelling forces, but they seem actually to be transformed into the will—or acts of volition—until even those which were at first, and before the act of volition, of an opposite character and tending towards action in an opposite or a different direction, seem to have ceased to exist altogether or even to have been turned into means of friendly aid and co-operation.

This I say in reference to the *ordinary* current of events in life. But in all lives and especially in the lives of great men, there are moments when will seems to rise in strength, towers above, and dominates over, all else, and the man becomes majestic if not terrible in his energy. No one that sees his manner or hears his voice is

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disposed to trifle with him; all are disposed to submit, be guided and led by him until the whole mass seem to have but one thought and one will, and that thought and will are his own.

52. The time has gone by when we can deny that the brain is the organ of the mind, and that the size, form and structure of the brain itself are important elements in determining character; and to some extent they do undoubtedly predetermine the life of a man. But the mind, as Will, has and can always exert a controlling force—not perhaps in all emergencies, but in the general direction of the thought, and in the control of the actions, enough undoubtedly to constitute *responsibility* for all we do or become.

One word in conclusion. We must remember that the science of mind, although one of the first to occupy men's thoughts is but yet in its infancy. The discovery of physiological facts which must be known before the phenomena of mind as distinct from what is purely physical and of the body, is quite recent and still in its progress. Doubtless many facts yet to be discovered will modify our views on purely psychological subjects to some extent, and this improvement in our knowledge of facts, and the dispensing with objectified abstractions—give promise, as I trust, of something better and more satisfactory in this department of knowledge than the labors of man have thus far been able to produce.

THE END.

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